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ABSTRACT

The Research and Guidance Laboratory for Superior Students at the University of Wisconsin which offers educational procedures and guidance for Wisconsin students, grade 9 through college age, is described and research reviews, as well as 70 abstracts of research conducted in the laboratory are included. The program is discussed in relation to teacher identification of students, a yearly visit by students to the laboratory, and laboratory staff visits to cooperating high schools. Included are identification criteria used by teachers and a seven step procedure used by one high school to select students for the program. Methodology for appraising capabilities of students is described in four abstracts on analysis of personal documents, seven abstracts on actuarial methods of prediction, and two abstracts on oral problem solving. Descriptions of students are given in 14 abstracts on characteristics, two abstracts on grouping preferences, and four abstracts on curricular preferences. Unusual classroom and curricular provisions for gifted students in high schools are described tabularly and in 16 abstracts. Nineteen abstracts are devoted to counseling and guidance procedures, which are additionally considered in relation to such aspects as work with parents and a team approach. Post high school choices and achievements are covered in 19 abstracts and in subsequent discussions on areas such as self concept and career choice. Appendixes include a second year information form, oral problems exercises, and test scores for grades 9 through 12. (MC)

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RESEARCH REPORTS: SUPERIOR STUDENTS IN WISCONSIN HIGH SCHOOLS

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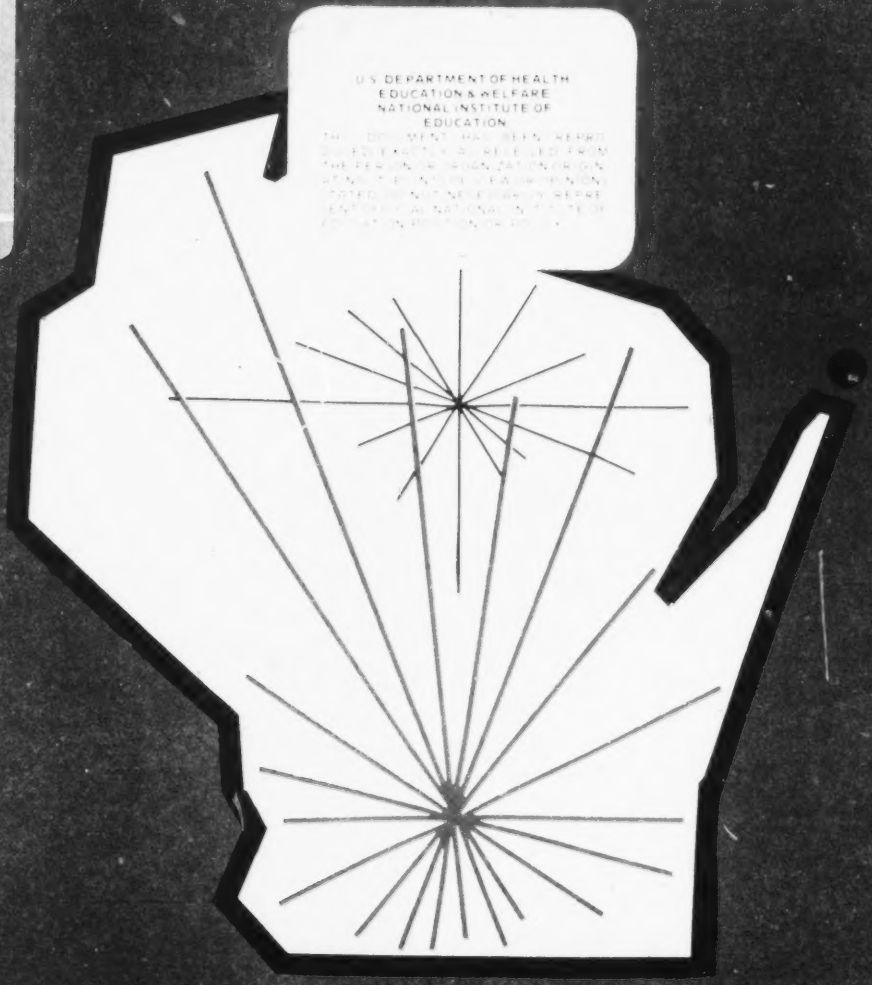

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Research and Guidance Laboratory for Superior Students
THE UNIVERSITY OF WISCONSIN

1971

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The work of the Laboratory is supported by University funds and fees from participating schools.

FOREWORD

As this monograph goes to press, two men who have given major leadership in developing and sustaining the Research and Guidance Laboratory are winding up long and constructive careers at The University of Wisconsin. They are Kurt F. Wendt, *Dean of the College of Engineering, member and past Chairman of the Advisory Committee of the Laboratory; and* John W. M. Rothney, *Professor of Education and Director of the Laboratory from 1957-1968. These men leave many legacies at Wisconsin, only one of which is the Laboratory and its program. We value highly our association with them and their contributions to the education and guidance of young people.*

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I

THE LABORATORY PROGRAM

The Research and Guidance Laboratory is a center for advanced study and development of procedures for education and guidance of promising students as they progress through high school and college and into adult citizenship. The Laboratory was founded in 1957 on the tenet that the problem of identifying and providing for such students is basically an obligation of the schools. The Laboratory attempts to stimulate and assist high school faculties to develop effective local practices which meet this obligation. At the same time, it carries on research on methods of discovery and development of youth of superior promise in any field. The Laboratory is a research-through-service organization which attempts to demonstrate what a joint attack by a university, public schools, and parents can accomplish in the conservation and development of human resources.

Faculties of cooperating high schools in Wisconsin select ninth-grade students on the basis of multiple criteria developed by the Laboratory staff. The selection procedures used have resulted in a group of some 2,900 participants whose average mental test scores are in the upper 3 to 5 percent of students in their age range and grade in school. There is, of course, systematic variance on such criteria as mental test performance, depending upon characteristics of local school populations from which the participants are drawn. It is assumed that in every school there are some students whose potentialities warran' special attention and programming which the school can develop and provide.

The function of the Laboratory is to serve as a demonstration and development center for counseling, guidance, and planning activities for all cooperating high schools. The students who participate from each school receive direct benefits of these activities, while at the same time the school is aided in supplementing and augmenting existing programs, or in inaugurating new procedures and services which will better meet guidance needs of students.

A central purpose of the Laboratory program, then, is to improve high school experiences and enhance the development of potentially superior students. This purpose extends not only to those young people who are selected to participate in the program, but also to the many others who attend schools where Laboratory influences are felt. Procedures whereby this general objective is pursued involve more specific goals for students, parents, and schools.

1. Selected students come to Laboratory facilities either at Madison or at Wausau for one-day visits at least once a year during their period of high school attendance. A full day of activities is arranged for them, including testing and evaluation, analysis of written and oral performances, visits to classes and laboratories, and conferences with University staff members in any area of interest. These procedures are designed to

   a. broaden their horizons with respect to educational and vocational opportunities.
   b. develop realistic self-concepts about their own strengths and interests.

c. foster plans for suitable educational programs.
d. discover methods for overcoming limitations.
e. encourage development of personal and academic strengths.
f. provide counsel on any matter which may influence fullest development of the individual student.

Findings are interpreted to the students and the implications are considered in individual counseling sessions. Highly individualized adaptations to particular characteristics and needs are emphasized throughout.

2. Students' visits to the Laboratory are followed closely by visits of Laboratory staff teams to schools they attend. At the schools, conferences are held with parents of each participating student. Laboratory findings are interpreted to the parents and supplemented by information parents give. Suggestions are made to parents regarding ways they may facilitate their child's growth. These conferences are designed to

   a. inform parents about characteristics of their children which they may not know.
   b. stimulate action of parents to meet developmental needs their child shows.
   c. facilitate communication between the parents, the school, and the student.
   d. discover points of view and other parental characteristics which affect the student's development.

3. On the basis of activities and performances at the Laboratory, a written report regarding each individual student is sent to the school he attends. These reports have been received and circulated among the teachers prior to the visit in the school by Laboratory staff. Ordinarily the reports contain information about the student's performance, interests, and needs, together with suggestions the school may implement to provide desired educational or personal experiences. After parent conferences are completed a teachers' meeting or in-service training program is held. Specific students and suggestions to the school are discussed, and general principles for guidance and education of superior students are emphasized. Usually by means of the case approach, attempts are made to solve problems encountered in educating superior students. Objectives of these training sessions are

   a. stimulation of and assistance with the processes of identification of superior students.
   b. encouragement and assistance in making special provisions for development of superior students, and stimulation to do so for other students.
   c. provision of information about educational and vocational requirements and opportunities particularly applicable to superior students.
   d. encouragement of innovation and experimentation in school procedures for superior students as well as for other students.
   e. demonstration of appropriate guidance services for high school students.

Financial support for the Laboratory comes from participating schools, various units of The University of Wisconsin, and from gifts and grants obtained from sources outside Wisconsin. Cooperating schools pay about one-fifth of all costs through fees to the Laboratory and travel expenses for participating students. The College of Engineering, School of Education, College of Letters and Science, School of Business, College of Agricultural and Life Sciences, Medical School, University Extension,

University Center System, and the Central Administration of The University of Wisconsin have all contributed substantially to the Laboratory program. Grants from the Wisconsin Alumni Research Foundation and the Cooperative Research Branch of the U.S. Office of Education have also been utilized.

Another important resource has been the faculty of all departments of The University of Wisconsin at Madison and at the Marathon County Campus in Wausau. These persons, together with a variety of professional persons outside the University, have contributed thousands of hours of time in conducting individual interviews with young people who are interested in their career fields. This work has been a highlight of the Laboratory program and fundamental to career guidance objectives for the students.

Thus the Laboratory is truly a cooperative effort which for more than thirteen years has maintained direct, personal, longitudinal, and functional relationships between the University and more than 2,900 top students, their parents, and their teachers in every corner of the state. More than 97 percent of all student participants who have graduated from high school have enrolled in higher education programs. Many have gone on to graduate and professional study. As a group, these young people have established a very outstanding record in college.

The Laboratory is not a recruiting agency for The University of Wisconsin, but it is oriented toward post-high school education. Every attempt is made to provide students and their parents with realistic information about the students and about higher education alternatives so that they can and will choose the most appropriate courses of action for themselves. To the extent that they do this, they are expected to find challenge, success, and satisfaction in their post-high school experiences.

Research Activities

In the foregoing section we have described the program of services offered by the Laboratory. Closely allied to this program are research activities designed to provide descriptive and evaluational data concerning schools, students, parents, and special procedures implemented to meet education and guidance needs of superior students. To date more than 70 research projects have been completed by University faculty and graduate students associated with the Laboratory. Reports of many of these studies have appeared in professional publications, but many others have never been put into print. All are briefly abstracted in following sections of this booklet.

The nature of the Laboratory program and policy places certain constraints on research, and those constraints bear comment here. The Laboratory is a research-through-service program with at least as much emphasis given to service as to research. In the hierarchy of priorities the student comes first. No activity is undertaken unless it can be justified in terms of its potential value to participating high school students. When students come to the Laboratory they are told that the activities they take part in are to help them learn more about themselves and their environment, and to assist them in discovering opportunities and making choices important to themselves. If an activity does not appear useful to these

goals, it is not instigated; and if, over time, an activity does not prove useful, it is not sustained. Any research data obtained at the Laboratory is obtained within the limits of this policy.

The inadequacies of control groups for use in research of the nature done at the Laboratory has been discussed thoroughly by Rothney and Lewis.* In spite of these inadequacies we have attempted some comparisons between Laboratory participants and youngsters who were "matched" on academic, familial, school, and community variables. Members of the comparison groups involved in most studies included in this booklet were identified from among entering freshman classes at The University of Wisconsin. As such, these students fall short of being fully representative of the same population as Laboratory participants, since some Laboratory students did not enroll in college, and many did not enroll at The University of Wisconsin. In a few instances other comparison groups were identified. By and large, however, we have not become involved in research using "treatment" and "no treatment" or "placebo" groups.

In some instances, two or more procedures for accomplishing a particular guidance goal have been compared for effectiveness. In all such research we have employed with every student a procedure actually designed to serve the goal. Generally speaking, research of this kind has been to compare one or more newly devised procedures against an existing Laboratory practice, the motive being to discover improvements in techniques for accomplishing given goals. In all cases, the goals we have in mind are to further the development of the student, and in no case is work toward the goal withheld from participants for the sake of establishing a control group.

Studies abstracted in following sections are organized so as to provide series of related investigations together with some discussion of general ideas and implications drawn from each series. Out of necessity we have been very brief in abstracting the studies reported here. Many of them, however, have been reported more fully in educational journals. Readers who are interested in looking at the research in more detail are referred to the published sources. Unpublished Ph.D. studies are located in the Memorial Library of The University of Wisconsin and are available also through University Microfilms, Ann Arbor, Michigan. Unpublished M.S. papers are housed in the reading room of the Department of Counseling and Guidance, The University of Wisconsin, 1815 University Avenue, Madison.

*J. W. M. Rothney and C. W. Lewis, "Use of Control Groups in Studies of Guidance," *Personnel and Guidance Journal*, January, 1969.

II

IDENTIFYING THE SUPERIOR STUDENT

Traditionally the identification of superior students has been done by administering an objectively scored test or battery of tests, setting an arbitrary cutoff point, and declaring that those students whose scores fall above that point were superior, talented, gifted, or even geniuses. The use of this procedure fails to give consideration to the fact that superiority can be exhibited in other ways than on tests and that tests can provide only relatively short and limited samples of achievement in highly structured situations. It also fails to consider the fact that teachers who have worked on identification of superior students are more likely to recognize and respond to the special challenges they discover during the identification process.

Despite what has been written about inadequacies of teacher judgments in identifying superior students, there is considerable evidence to indicate that if they are given some instruction about what to look for and provided with some cautions about avoiding common errors, they can do the task very effectively. No procedure is perfect, and some good students are likely to be overlooked under any system; but a procedure such as the one outlined on pages 5 and 6 has the merit of looking at students from several angles rather than depending on short and limited samples that the use of tests alone provides.

When teachers are to become involved in identification of superior students, guidelines similar to the following may be utilized. Teachers may be reminded that a superior student may not necessarily meet *all* the following criteria, but he will usually meet some combination of them:

1. Uses large vocabulary easily and accurately.
2. Is effective in spoken and written communication.
3. Has a rich reading background, and shows evidence that he thinks about his reading and likes to discuss it.
4. Shows a wide range of interests, or in exceptional cases a heavy concentration on one.
5. Spends time beyond usual assignments or schedules on things that interest him.
6. Spends much time on special projects of his own.
7. Performs significantly above grade level in school subjects.
8. *Usually* receives good marks in school classes.
9. Tends to figure out what is wrong with an activity and show how it could be done better.
10. Gives refreshing twists to even old ideas.
11. Shows little patience with routine procedures and skills.
12. Asks penetrating questions, particularly about causes and reasons.
13. Likes to seek answers to problems and puzzles.
14. Is quick to recognize relationships.

One high school identifies its superior students each year in the following manner:

Step 1. All ninth-grade teachers are asked to nominate, with criteria similar to the above in mind, all the students they consider to be superior learners in their classes. (They are cautioned to consider for nomination even those students who cause disciplinary

difficulties and those who may be apathetic if, despite these characteristics, they have shown that they can learn well.

Step 2. Counselors list all students who are nominated by the teachers and note the number of times each student has been named.

Step 3. Scores on tests of mental ability and achievement are added to the list for each student along with an indication of whether or not he has been on the high honor roll, the regular honor roll or has not been on it.

Step 4. The list of nominees with the number of times nominated, test scores, and honor roll standing is resubmitted to all teachers.

Step 5. Teachers rate any students they would like to renominate (or nominate for the first time even if they had overlooked them at the first step) on the following scale which was devised for the purpose. (Teachers are encouraged to interview the students before they rate them.)

CHECKLIST

Student's Name _____ Date _____

Circle a number on the scale at a point you think the pupil under consideration rates in the characteristics named. The scale numbers should be interpreted as follows: "1" indicates below average, "2" indicates average, "3" indicates above average, "4" indicates well above average, and "5" indicates exceptional.

	Low				*High*
High academic achievement	1	2	3	4	5
Advanced vocabulary and reading level	1	2	3	4	5
Expressive fine arts talent	1	2	3	4	5
Wholesome personal-social adjustment	1	2	3	4	5
Physical competence	1	2	3	4	5
Superior intellectual ability	1	2	3	4	5
Effective work independently	1	2	3	4	5
Persistent curiosity	1	2	3	4	5
Strong creative and inventive power	1	2	3	4	5
Special scientific ability	1	2	3	4	5
High energy level	1	2	3	4	5
Demonstrated leadership abilities	1	2	3	4	5
Well-developed mechanical skills	1	2	3	4	5

Please comment or list other reasons you care to as to the "Why" of your choice.

Is this student your 1st, 2nd, 3rd, or 4th choice? (Circle one)

Teacher's signature _____

Step 6. A guidance committee composed of four teachers, two counselors, and the vice principal study all the records (ratings, test scores, number of nominations, honor roll membership, and written comments by teachers) of all the nominees and select those whom they considered to be superior.

Step 7. The final selections are reported to the teachers at a faculty meeting.

The procedure described above has the advantage of giving consideration to the opinions of all ninth-grade teachers and keeps them informed about the school's effort to make special efforts to recognize

students' superior academic performances in all fields. It gives due consideration to superior test performances. (The average IQ of the students selected by the process described above for one year was 131 and the average percentile on the general achievement test was 95.) It also recognizes good academic performance in several areas by using the honor roll membership criterion.

In a procedure of this type, there is always the risk of overlooking the nonconforming student or the very bright student who does not perform at a high level in classes. It has been observed that as teachers become more aware of this possible difficulty, they tend to nominate such students and provide comments in defense of their nominations. They may indicate that they have evidence that one of their students is a superior learner even though the school has not reached him. The procedure could possibly result in the failure to recognize a highly creative student or the one who performs at an exceptionally high level in one area, but again, as the teachers become more aware of these difficulties they are less likely to overlook such students. And the procedure described above gives them an opportunity to present evidence in justification of their nomination of a particular student.

After the nominations have been made by methods such as those described above the counselor will interview the subjects, using such questions as those in the Interview Form (Appendix A). He may want to use some demanding tests or exercises such as those listed under the headings of *Exercises in Relationships* and *Oral Problem Solving Test* described on pages 54 and 55 to get further evidence of the student's mental performances. And he may decide to use any of the other instruments described later in this report to supplement the information about the subject.

Having compiled and interpreted the data, the counselor is now ready to meet with the particular student's teachers in a large school or with all members of the faculty of a small school to present his findings and interpretations. Consideration then may be given to suggestions for action to provide the best possible program for each superior student.

III

METHODS OF APPRAISAL

Students at the Laboratory usually perform at or above the 95th percentile on tests standardized on normal populations. It has been necessary, therefore, to devise instruments more sensitive to verbal and mathematical capabilities of this select population of students. Methodology utilized has taken three forms: oral problem-solving tasks; writing samples; and verbal or mathematical tests. The purpose of this section is to examine each of these three areas of student evaluation. Rothney (1963), in summarizing a number of studies carried on over a three-year period with 1400 superior students, provides the basis for the classification system to be employed.

Methods for Analyzing Personal Documents

deLemos, Thereze P. P. "A descriptive study of autobiographies of a selected group of superior students." Unpublished Master's thesis, 1960.

Autobiographies of 100 students attending the Research and Guidance Laboratory were examined in an attempt to determine group similarities; to devise a guide which would facilitate analysis of future autobiographies; and to describe the ways adolescents view themselves and their surroundings. Results indicate that students expressed optimism in their essays; that autobiographies can be used as a complementary means of understanding individuals; that a high percentage of agreement can be reached between raters of autobiographies; and that further study is needed to determine the influence of stimulus questions on the content of autobiographies.

Rothney, J. W. M. "Studies in the discovery and guidance of superior students." Cooperative Research Project SAE 8961, U.S. Office of Education, 1963, 101 pp.

The report summarizes a number of separate studies carried on over a three-year period with 1,400 superior students. Separate chapters are organized to discuss the use of personal documents in analyses of attitudes, study of oral problem-solving performances, and problems in actuarial and clinical predictions of performance. Most material summarized in the report is abstracted elsewhere in this booklet.

Sanborn, Marshall P. and Niemiec, Carl J. "Identifying values of superior high school students." *School Counselor*, March, 1971.

This study was an attempt to develop a procedure whereby cumulative records and structured interviews could be used to determine hierarchies of values thought to be related to choices and achievements of superior high school students. Results indicated that counselors using cumulative records, counselors who conducted the interviews, and the students themselves could usually agree in their independent judgments concerning the value hierarchies of the students. There was also evidence that patterns of the values under study (Material, Recognition, Social, Personal Development) had considerable stability over the four-year high school period. Implications for school counselors' practice are presented.

Stankowski, Wayne J. "Patterns of students' writing in relation to test and academic performance." Unpublished Ph.D. Dissertation, 1967.

This study was designed to determine the value of a procedure to identify factors found in compositions written by 143 high school students over a four-year period which might indicate why some superior students tend to achieve at high levels in college while others do not succeed as well.

An overall view of the results provided evidence of a typical but limited pattern of content and effective communication for each group of students. Patterns of content and effective communication were not closely related to superior students' college achievement. A few items of content found within the patterns did, however, suggest significant differences among samples. The majority of students who did not succeed in college displayed various writing skills for three of the four years which were less effective than those reported for other students. It appeared that effectiveness of communication rather than items of content or test performances were related to students' academic achievement. An analysis of students' patterns of effective communication might be used to obtain additional criteria for identifying differences in performances, as measured by tests, and by writing.

Analysis of student writing samples and cumulative reports has traditionally resulted in highly subjective ratings. DeLemos (1960) attempted to alleviate this problem by devising a guide which could facilitate analysis of autobiographies. Results of his investigation suggest that autobiographies can be used as a complementary means of understanding individuals and that a high interrater reliability can be obtained among autobiography raters. Stankowski's (1967) study confirms the work of deLemos and provides additional evidence that analysis of a student's pattern of written communication can serve as a valuable aid in predicting superior student academic success. Sanborn and Niemeic (1971) expanded the above concepts to include analysis of cumulative records and structured interviews. Results of their study suggest that described methods of analysis can result in findings which concur with counselor findings resulting from personal interviews and with student self-evaluations.

Methods devised by the authors above should be expanded to incorporate additional student variables. Use of open-ended instrumentation can provide useful, quantifiable, data about student attitudes, aspirations, preferences, goals, and scholastic potential.

Actuarial Methods of Prediction

Bourne, Robert K. and Rothney, J. W. M. "Assessments of counselees writing skills by tests and essays." *Vocational Guidance Quarterly*, Autumn, 1960.

The study was to determine how well the Language Usage Test of the Differential Aptitude Tests would predict writing performances of ninth-grade students. Results indicated that evidence of language usage might better be drawn from performance with the language and not from recognition of items of error. Test data did not provide meaningful scores predictive of students' written performances. Counselors who want evidence about effectiveness of students' composition skills must read what they write. A standardized test is unlikely to provide the evidence.

Camp, W. L., and Rothney, J. W. M. "Use of the Concept Mastery Test in study of superior high school seniors." *Vocational Guidance Quarterly*, Summer, 1962.

Performance of 49 males and 51 females on the Terman Concept Mastery Test (TCM) were analyzed to determine related personal, scholastic, and demographic variables. TCM scores were shown to be interdependent with percentage of rural population attending the schools where the subjects attended, occupational level of fathers, educational level of fathers, career goals of the subjects, broad field interests (humanities vs. sciences), and use of reading as a recreational activity. There was some evidence to suggest that the TCM is culturally biased.

Christie, Richard F. "An analysis of the WITS Analogies exercise." Unpublished Master's thesis, 1966.

An examination of the internal consistency of the WITS Analogies Exercise (see Appendix) led to revision of the instrument. It was also concluded that future study should be directed toward scoring problems. Questions were raised concerning covergent and divergent types of responses, and concerning development of means to inspire divergent thought. Using a scoring protocol developed for the researcher, a high degree of interrater agreement was found in scoring the WITS-Analogies.

Connell, Karen J. "The construction and use of two tests to separate high verbal from high quantitative performers at the high school level." Unpublished Master's thesis, 1963.

The report describes procedures in the development of verbal and mathematical sections of the Wisconsin Inventory for Talented Students (WITS-V and WITS-Q) which is used at the Laboratory to assess verbal and math skills of superior students. A report of norms for the two sections of the test are included in the appendix.

Gupta, Deenhandhu. "A report on the investigation of the validity of the activities checklist administered at the Research and Guidance Laboratory at The University of Wisconsin." Unpublished Master's thesis, 1960.

The records of 47 randomly selected students were examined in an attempt to validate the activities checklist used in the Research and Guidance Laboratory. Results indicate that the checklist was dependable in 81 percent of the cases studied. The value of this instrument lies in its ability to indicate job-related areas of interest; providing information about academic areas of interest; and in determining extracurricular commitments of students. This instrument is viewed as a valid auxiliary information-gathering counseling tool.

Harrington, Patricia M. "The use of free response analogy terms to assess verbal performances of superior high school students." Unpublished Master's thesis, July 1965.

An attempt was made to develop a new form of verbal reasoning assessment. The instrument (Wisconsin Inventory for Talented Students-Analogies) consisted of 30 analogies items. Students were asked to construct new analogies statements containing elements and involving principles important in the given analogies. Results showed that performance on the WITS-Analogies was independent (*i.e.*, not highly related to other test performances). Also, it was discovered that students' ability to explain elements, principles, or meanings associated with given items was not highly related to their ability to create new examples. The WITS-Analogies was thought to have promise for those interested in as-

sessment of verbal skills which goes beyond usual recognition and recall tasks.

Material in this thesis is also reported in:

Rothney, J. W. M., and Sanborn, Marshall P. "Verbal skills of superior students." Final Report, Cooperative Research Project #S-036, U.S. Office of Education, July 1965, 79 pp.

Actuarial methods of predictions do not appear in educational circles by chance. Rather, they come into being by design. Specific questions demand specific answers. Such is the case in the development of instrumentation in the Laboratory for Superior Students. Connell (1963) recognized a need to provide additional data about the verbal and mathematical performance of superior students. The products of her investigation were the verbal and mathematical sections of the Wisconsin Inventory for Talented Students (WITS). The test yields a wide distribution of scores among Laboratory participants (see Appendix). Likewise, Harrington (1965) acknowledged a need to provide a means for additional assessment of superior students' verbal reasoning skills. This need led to the development of the WITS-Analogies which provides a means for assessing verbal skills beyond recognition and recall tasks. Each of these instruments has shown promise in assessing student skills in either verbal or mathematical areas, but much development work needs yet to be done on the analogies section.

Successful instrument development is highly dependent upon instrument analysis and evaluation. Christie (1966) recognized this fact and examined the internal consistency of the WITS-Analogies. Results of his investigation led to a revision of the original instrument. Gupta (1960) provided a similar service in his validity study of the activity checklist used at the Laboratory. His study did not lead to revision of the original instrument since his conclusions suggested that the instrument in its original form was a valid auxiliary information-gathering counseling tool.

Additional examinations of actuarial predictive methods have been undertaken. Camp and Rothney (1962) analyzed the Terman Concept Mastery Test (TCM) in relationship to personal, scholastic, and demographic variables. Results of this investigation suggest that the TCM is a culturally biased instrument. Bourne and Rothney (1960) concluded from their study of the Language Usage Test of the Differential Aptitude Test that students' written performances are a better indication of students' composition skills than a standardized instrument.

In conclusion, actuarial methods can be of assistance in evaluating skills of students. However, instrumentation has to be carefully developed and continuously evaluated in light of educational objectives. When an instrument provides data of a reliable, valid nature it should be retained. If, however, it fails in either of these areas it should be revised or discarded.

Oral Problem Solving

Cody, John J. and Rothney, J. W. M. "Oral problem-solving performances of superior high school students." *Personnel and Guidance Journal*, January, 1963.

Twelve "brain twisters" were administered in individual interviews to 474 students in grades 9-12. Students were asked to solve the problems orally, and their responses were tape recorded and analyzed to determine processes whereby solutions were reached. Analysis of processes utilized by the students indicated that individual strengths and weaknesses could be discovered. It was interesting to note that problem-solving skills did not improve significantly over the four-year period of high school attendance. This gave rise to questions concerning effectiveness of high school offerings, since it would appear that many of the skills could be taught. More focus on processes whereby students solve problems is justified.

Koopman, Norbert E. "Evaluations by superior high school students of their problem solving performances." Unpublished Ph.D. Dissertation, 1964.

Oral problem-solving exercises were administered in individual interviews to 100 boys and 100 girls in grades 9-12. Students were asked to solve the problems and to evaluate the quality of their own solutions. Although there were no group differences in ability to present correct solutions, males were more often certain of their responses than were females. This was true both when solutions were correct and when they were incorrect. Degree of certainty about one's decision or solution to a problem may affect subsequent behavior of the individual. Further study should be done to understand the relationship between certainty and action in practical situations, and to understand the meaning of systematic male-female differences on this dimension.

Students are often evaluated on the basis of written compositions or as a result of responses to objective instrumentation. However, relatively little attention has been given to evaluation of oral performances. Cody and Rothney (1963) recognized this situation and developed a method for presenting students with oral problems and provided a means for them to evaluate their own solutions. Conclusions emanating from their study indicate a lack of provision for developing oral problem-solving skills in the curricula of students. They conclude, therefore, that more emphasis be placed upon this phase of a student's education. Koopman (1964) noticed sex differences associated with responses in the Cody and Rothney data. He concluded that additional research should be undertaken to understand causes and implications of these differences.

The methods of student evaluation discussed in the preceding paragraphs are not inclusive. Rather, they are intended to provide the reader with an awareness of what has been attempted in the development of student evaluation. More clearly defined evaluation devices can provide the educator with a better means of ascertaining where students are in respect to overall educational objectives. To achieve this end, research is continually needed to evaluate these devices presently in operation and to develop new, improved instrumentation. Also, research is needed to examine which combination of evaluative devices can provide the optimum benefits to students and educators alike.

Those who work with multipotential students cannot depend on ordinary means for assessing their skills and capabilities. Most of the usual standardized tests have "ceilings" insofar as superior students are concerned. Also, with but few exceptions, such instruments provide very little opportunity for the individual to show unique and creative qualities which may be extremely important factors in his learning and development. And finally, most tests focus on mental products and give little attention to mental processes whereby products are achieved. When multipotential students are freed from usual test routines and given latitude of response, and when their reasoning as well as their conclusions is analyzed, exciting qualities of ordering and insight come to light. These qualities cannot be overlooked by those who attempt to assess their potentialities.

IV
DESCRIPTIVE STUDIES

Superior students, like all students, are unique individuals. Yet, as a group they have some characteristics in common. It is the purpose of this section to present studies which have focused on these characteristics. The results obtained, and presented, are far from definitive. However, indications drawn from these studies portray, among other things, a picture of a student with specific academic preferences (Engmann, 1959), generalized reading preferences and patterns (Cromett, 1960), recognizable scholastic trends prior to junior high school entrance (Konle, 1961), predictable TV viewing habits (Nelson and Rothney, 1964), and a tendency to be a family's firstborn child (Bradley and Sanborn, 1969). Twenty-three studies have been abstracted and classified into one of four categories: Descriptive Characteristics of Superior Students; Class Grouping Preferences of Superior Students; Curricular Preferences of Superior Students; and examination of the environmental elements in which superior students function.

Descriptive Characteristics

Bradley, Richard W., and Sanborn, Marshall P. "Ordinal position of high school students identified by their teachers as superior." *Journal of Educational Psychology*, 1969, Vol. 60, No. 1, pp. 41-45.

Between 1956 and 1965, teachers and counselors in 90 schools used a list of 14 behavioral criteria as guidelines to select 1,503 ninth-grade pupils to participate in a special counseling program for superior students. These students' birth orders were compared with census figures and with chance expectancies based on number of children in Ss' families. Significant overrepresentations of firstborns were found for nine of the ten years and for every family size. Striking similarities were found between the overrepresentation of firstborns in this population and groups of college students and eminent persons reported in previous studies. The overrepresentations apparently reflect developmental phenomena which are operative at least as early as the ninth grade. The study illustrates, however, that by the time students reach high school these phenomena may be as much a function of favorable opportunities as they are of favorable characteristics of firstborns for achievement.

Briskin, Alan S. "A model of behavioral patterning." Unpublished Ph.D. Dissertation, 1970.

The validity of three behavior patterns was tested using two sources of data on each of 88 superior students. These sources were behavior category ratings on autobiographical essays, and matching scores on a study of the students' conformity to group pressure in making judgments. There was significant association between essay analysis and conformity scores, but follow-up of the students after four years showed changes in behavior patterns. On the basis of the original data, follow-up data, and theoretical assumptions concerning adolescent development, a behavioral patterning model was developed.

Burke, Margaret J. "A case study approach to the development of self-concepts among a group of superior students." Unpublished Ph.D. Dissertation, 1968.

Four male and four female students were studied longitudinally over an eight-year period to explore development of self-concepts and factors influencing self-concepts in high school and college. Relationships between expressed self-views and overt behavior were established. The study demonstrated the usefulness of adequate cumulative records in tracing development of individuals from childhood to young adulthood.

Cromett, Harvey J. "Some of the reading practices of a selected group of superior high school students." Unpublished Master's thesis, 1960.

This study was in two parts, the first being a description of reading practices of 41 sophomore and junior students, and the second being an analysis of their reading practices in relation to performances on the *School and College Ability Test* (SCAT). Reading patterns were described both in terms of time spent per week and type of material consumed. Students who scored below the SCAT mean obtained on the total group read fewer books than those who scored above the mean. This difference was more pronounced among boys than among girls. The amount of nonfiction read was about the same among both groups, and the principal difference in amount of reading was in fiction. We may assume from this that the higher scoring group used reading as a form of entertainment more often than the lower scoring group. There were also striking differences in the items of interest covered in periodicals. Nonassigned reading had an important place in activities of superior students, and was clearly associated with (SCAT) performances. Most of the higher scoring group reported reading eight or more hours per week; whereas most of the lower scoring group read four hours or less each week.

Engmann, E. V. Teye. "Mental characteristics of superior children." Unpublished Master's thesis, 1959.

This investigation attempted to isolate chief characteristics of academically superior students who attended the Research and Guidance Laboratory. Results of this study indicate that selected students scored in the top 5 percent on tests administered to them within their own school; that students averaged higher than the 90th percentile on standardized tests given at the Laboratory; that students favored mathematics classes most, science second best, and English classes third; that students participated in a great diversity of extracurricular activities; and that gifted children attending the Laboratory had problems and aspirations common to all people.

Kappes, Donald H. "A descriptive study of the characteristics of superior college freshmen." Unpublished Master's thesis, 1963.

This was a follow-up study of 121 Laboratory participants during their first year in college. Four areas other than achievement were of particular interest—practicality, sociability, intellectuality, and goal orientation. The only area which showed enough consistency to be regarded as a characteristic trait was practicality.

Konle, Carolyn. "Elementary school backgrounds of fifteen superior children." Unpublished Master's thesis, 1961.

Case studies of 15 Laboratory participants were made to determine indices of superiority prior to grade nine. The report showed that these students could be recognized very early in their schooling. Scholastic

grades, scores on tests, attitudes toward other pupils, teachers' remarks, and ordinal position in family were comparable among the group.

Kukla, J. G. "A comparison of activities of superior students and average students at the sophomore level." Unpublished Master's thesis, 1960.

Activities of 72 superior tenth graders were compared to those of 72 students whose test scores ranged between the 25th and 74th percentile. Important differences in activities were noted in areas of reading, music, leadership, doing household chores, and caring for animals. In each case superior students were more active. Average students were slightly more active in sports, except for swimming which appeared to be a more superior student activity. The two groups were similar with regard to amount of activity in collecting hobbies, artistic pursuits, and miscellaneous games and diversions. Superior students spent more time with younger children.

Landwehr, Virginia. "The relationship between predicted and actual performances of superior students on standardized tests." Unpublished Master's thesis, 1961.

This study examined the extent to which 78 senior and 66 freshmen participants in the Research & Guidance Laboratory could predict their performance on standardized tests. Results indicate that freshmen were more able to predict score placement (62.1 percent predicted within ten points of their actual score on the verbal section of the SCAT) than were seniors (26.9 percent predicted within ten points of their actual score on the Terman Concept Mastery Test). Suggestions for this occurrence are offered.

Mowsesian, Richard; Heath, Brian R. G.; and Rothney, J. W. M. "Superior students' occupational preferences and their fathers' occupations." *Personnel and Guidance Journal*, November, 1966.

The relationship between the occupational preferences of 147 superior students and their fathers' occupations was traced over the four-year period that the students attended high school in Wisconsin. Analysis of the data indicated that both male and female superior students tended to state vocational preferences at the professional level early in high school and to maintain this preference throughout. Their occupational preferences were generally at a higher level than those of their fathers. There was no trend away from general preferences for work at a professional level toward naming of specific occupations within that level. The results suggest that theories of vocational development that imply that stages are passed through during later adolescent periods do not apply to the superior student population of this study.

Mueller, William J., and Rothney, J. W. M. "Comparisons of selected descriptive and predictive statements of superior students, their parents, and their teachers." *Personnel and Guidance Journal*, April, 1960.

Opinions of 78 ninth graders, their parents, and their teachers were studied to determine the extent of mutual understanding among individual student-parent-teacher groups. Results showed a great deal of inconsistency between descriptions of persons close to the students and self-descriptions of the students. Students consistently underestimated parents' opinions about them, and were actually more aware of teachers' opinions than of parents'. Implications were for increased counselor activity with teachers and parents, as well as with students, aimed at improving interpersonal understanding among principal persons in the students' life.

Nelson, Randolph J., and Rothney, J. W. M. "Television and the superior student." *School and Society*, Vol. 92, No. 2251, Dec. 12, 1964, pp. 385-387.

A group of 100 superior students in grade 12 was compared with a sample of 100 students drawn at random from high school senior classes, to determine differences in TV viewing habits and influences. Superior students viewed less than half as many drama shows on a regular basis, and approximately one-third fewer programs of other types than did the comparison group of students in general. They also showed less knowledge of TV programming than the comparison group. Superior students most frequently viewed sports events on TV, whereas the comparison group most frequently viewed situation comedies and variety shows. It was speculated that superior students may prefer more achievement-oriented activities, or that they may derive more entertainment from other verbal activities, such as reading.

Nighbert, Joyce Ann. "Case studies: four superior students." Unpublished Master's thesis, 1965.

An exhaustive case approach to longitudinal development of four students over eight years serves to illustrate the uniqueness of individuals—even though they have been classified as similar for educational purposes.

Smaby, Marlowe H. "The relationship of superior students' social selves and their extracurricular activities." Unpublished Master's thesis, 1965.

Superior students' thoughts about peers' opinions of them (social selves) were examined in relation to their participation in extracurricular activities. Results did not indicate that activity participation affected the students' social selves in any systematic way. Highly active students and relatively inactive ones supplied similar patterns of social self-judgments. Inasmuch as social selves were relatively stable throughout high school, it did not appear that activity participation led to changes in social self either. Possibly youngsters' choices of activities tend to reflect, rather than develop, their social selves.

Studies presented above examine numerous characteristics of the multipotential student. Nonetheless, a total description is still in the formative stages. Although Konle's (1961) research indicates that identification of the superior student can occur in the elementary grades, further research is needed with superior students to isolate and identify specific academic and interpersonal characteristics which enhance, or detract from the student's ability to function in the school setting. Isolation and examination of clearly defined variables could provide the basis for establishment of educational procedures that might facilitate the education of both superior students and students in general.

To accomplish this task educational research must be focused upon elementary schools in an attempt to determine what differentiates superior students from students in general. Students in elementary schools that exhibit multipotential characteristics (see Chapter II) should be incorporated into longitudinal studies with the hope that the longitudinal approach will provide a better means for examining developmental aspects of superior students. Most research thus far done has involved attempting to get early facts by recall, rather than by current assessment.

The majority of abstracted studies deal with students in grades 9-12. A variety of topics are covered. Bradley and Sanborn (1969) examined

the relationship between superior students and ordinal position in one's family. Briskin (1970) investigated students' conformity to group pressure in making judgments, whereas Cromett (1960) described reading practices of sophomore and junior class superior students. Nighbert (1965) suggested that superior students are unique as individuals, despite the fact that they are classified as similar for educational purposes. Burke (1968) demonstrated the use of cumulative records for tracing the development of students. Kappes (1963) isolated practicality as the only one of four traits which showed enough consistency to be regarded as a characteristic trait of superior students. Each study adds a small portion to the total mosaic. The total picture, however, is far from complete. Research must be accomplished which centers upon attitudinal development, value structures, student interpersonal relationships, test-taking propensities, vocational development, environmental contingencies, and psychological development.

Grouping Preferences of Superior Students

Bean, Robert A. "A survey of the attitudes of a selected group of freshman and sophomore superior secondary students toward acceleration and grouping." Unpublished Master's thesis, 1962.

179 girls and 180 boys in grades 9 and 10 were surveyed to discover their attitudes toward acceleration and ability grouping. About 25 percent indicated that they would finish high school in less than four years if allowed to. The principal advantage they saw in acceleration was the savings in time in getting through long training programs and into careers. Principal disadvantages were the shortening of time available for high school extracurricular activities and friendships. About 67 percent favored ability grouping, stating that advantages were additional challenge, stimulation, and content coverage. Main disadvantages of group classes were thought to be primarily social.

Scheibach, Lawrence. "A study of the attitudes of academically-superior high school students toward homogeneously grouped classes." Unpublished Master's thesis, 1965.

Attitudes of 265 students in grade 10 were surveyed. About 75 percent favored having some classes composed of better-than-average students. They cited greater challenge, more stimulating competition, and opportunity to progress faster as main reasons for this preference. In general, both boys and girls tended to favor ability-grouped classes, but there was some evidence to indicate that girls in small schools were less favorable than boys. Among boys, negative attitudes about grouping were primarily in terms of competition and work load; whereas among girls the negative attitudes were primarily because of social consideration.

Studies by Bean (1962) and Scheibach (1965) have been abstracted to show student preferences about homogeneously grouped classes. Their findings indicate that students enjoy the academic advantages of greater challenge, more stimulating competition, and greater course content coverage but that such grouping hinders the development of certain types of interpersonal or social relationships. This disadvantage appears to be especially true in smaller schools.

Additional research must be undertaken to discover methods of "bridging the gap" between academic provision and social opportunity. Students learn to function in the interpersonal realm by being exposed, in

a variety of situations, to many types of people. Continuous grouping can prevent requisite exposure. Although some grouping is appropriate for academic purposes, other means must be developed to provide superior students with needed academic challenge and also wide social contacts.

Curricular Preferences of Superior Students

Haase, Evelyn M. "A description of superior students in relation to foreign language study." Unpublished Master's thesis, 1962.

The purpose of the study was to determine reactions of 178 superior students to the teaching of foreign languages. More than 84 percent studied some foreign language during high school, and about 50 percent had two years of a foreign language during high school. About 15 percent had studied one language for four years. Most would have taken more years if courses had been available. The total percentage of favorable comments about their language courses was 76 percent, but the students preferred modern languages to Latin. A majority stated that they would not choose careers where knowledge of a foreign language was a major requirement.

Kuntz, Karen L. "High school teachers' attitudes toward non-creative and creative superior students." Unpublished Master's thesis, 1964.

Eleven "creative" and eleven "non-creative" students were studied to determine the extent to which teachers spent extra time or made extra provisions for their advancement or enrichment in school. Results showed almost precisely the same number of individualized provisions for both groups. In neither group, however, were provisions made in the area of creative production.

Tarbell, Beatrice. "Changes in expressed reactions of superior high school students to physical education over a two-year period." Unpublished Master's thesis, 1963.

A survey of superior students' attitudes about physical education showed that in general they derive pleasure and recognize benefits of physical education classes. More than most students, however, they feel the pressure of time and difficulty in scheduling physical activities in conflict with academics. Over a two-year period in high school, their participation in sports activities increased slightly, but stated attitudes about physical education did not change. About 55 percent of the girls and 65 percent of the boys said they would elect physical education if it were not required.

Witczak, Lois Ann. "Descriptive study of subject matter interest and aversion of superior students." Unpublished Master's thesis, 1961.

Curricular preferences of 50 male and 50 female high school superior students were examined. Results indicate that males prefer math and science courses; that often males would prefer to drop English and foreign languages; that social studies was often mentioned by both sexes as the course to be dropped from the program; that males prefer to drop courses which lack value whereas females prefer to drop courses which are not interesting; and that superior students received better grades in those subjects which they preferred to spend their time, than in those which they would choose to drop.

Witczak's (1961) study dealing with the preferences of superior students reveals a sex difference in curricular choices, whereas studies by

Haase (1962) and Tarbell (1963), concentrate upon students' preferences in regard to specific subjects. When taken together these studies indicate that students tend to react favorably to courses which are interesting, beneficial to their physical well-being, and ones that hold pragmatic or utilitarian values for their future. By contrast, courses that do not have these characteristics are viewed in a more unfavorable light.

Two major areas have been neglected in the research accomplished to date. First, the studies abstracted above have been limited to academic areas. The one notable exception to this is Tarbell's (1963) study on physical education. Additional research must be undertaken to investigate student perceptions of the totality of course offerings in a comprehensive high school. Secondly, each of the abstracted studies was aimed at determining preferences for an entire course of study. Obviously this approach has severe limitations. Students could conceivably react most positively to one aspect of a course of study and very negatively to another portion. The timeliness of sampling becomes the critical variable. Also, the educational methodology employed was not examined. That is, investigations of educational approaches which are perceived as beneficial by students should be conducted. Student preferences as to didactic, seminar, or independent study approaches must be carefully examined in light of specific academic offerings.

Environmental Elements

Hays, Donald G. and Rothney, J. W. M. "Educational decision making by superior secondary-school students and their parents." *Personnel and Guidance Journal*, September, 1961.

Intrafamily relationships of 100 ninth-grade boys and girls and their parents were analyzed to discover how often parents leave educational decisions to their children. Types of decisions of concern were those dealing with enrichment, acceleration, ability grouping, post-high school planning, leadership. It was clear that parents—particularly fathers—would rather make the choices than leave them to the children. There was a significant agreement among families on only about one-third of all educational issues included in the survey. Implications were for more counselor-arranged conferences between faculty, parents, and students for the purpose of educational decision making.

Hoedt, Kenneth C., and Rothney, J. W. M. "Guidance for superior students: Some problems." *Vocational Guidance Quarterly*, Spring, 1963.

Implementing ideas for improved guidance and education of superior students is easier said than done. Structured interviews with 46 principals of schools participating in the Laboratory program indicated that although 96 percent approved of guidance suggestions made regarding students in their schools, about one-fourth said they would not strongly support implementation of such services. A primary reason for hesitancy was the principals' belief that existing school staff was inadequate to do the job.

Vogler, Ernest. "The superior students in Mineral Point High School." Unpublished Master's thesis, 1962.

This study investigated methods of improving counseling services offered superior students at one Wisconsin high school. Recommendations made are based upon responses of eleven students and 22 parents to a series of fifteen questions. These recommendations include utilization of indepen-

dent study projects, participation in college courses during summer sessions, completion of high school in three years, involvement in correspondence courses, employment of acceleration programs, and use of advanced study classes. Methods and consideration for generalizing suggestions made to other high schools are explored.

Student perceptions are a meaningful variable to examine if one wishes to affect academic provisions in the direction of stated educational objectives. However, an auxiliary method of achieving one's goals might be to affect the environment in which the student functions. Hoedt and Rothney (1963) investigated the feasibility of this approach by examining administrative preferences for implementing ideas for improved guidance and education of superior students. Likewise, Hays and Rothney (1961) examined the impact of parental influence upon the educational decision making of superior students. The common thread running through the two studies is in the area of need for increased communication. Both studies charge counselors with the responsibility for developing procedures for facilitating communication between faculty, administration, parents, and students. Research is needed to determine the most viable means of proceeding. Inquiry must be directed toward development of communication methodology, methods for evaluating communicative processes, provisions for continuous updating of procedures and means of providing for participant feedback. At present, relatively little has been accomplished in any of these areas.

V

CLASSROOM AND CURRICULUM PROVISIONS

No adequate program of education for unusual students can be accomplished without unusual provisions. We know this insofar as the mentally, emotionally, and physically disabled are concerned. Provisions for these students go beyond ordinary curriculum and grouping procedures. The same ought to be true for students whose interests and capabilities exceed those of general populations; but in a general sense it appears that the principle, though often stated, is seldom put into practice.

In 1964 the Laboratory surveyed Wisconsin secondary schools to determine the extent to which eighteen specified types of special activities for superior students had been recently implemented. Responses were received from 75 percent of all schools, representing all areas and types of schools in the state except Milwaukee. Results are reported on the following pages. Activities have been organized according to whether they were procedures implemented for individual students (Tables 1 and 2) or whether they were programs designed for groups (Tables 3 and 4).

Figures in Table 1 show that individualized procedures specified were implemented only infrequently, whether in terms of percentages of schools or in terms of numbers of students involved. In no case did the number of students involved amount to more than a fraction of 1 percent of all students in the reporting schools. Experiences with Laboratory participants have led us to the belief that such procedures, employed singly and in combination, might well be appropriate for most high school students who perform in the top 5 percent according to common standards used for their age and grade in school. If this belief is correct, then it follows that most of the procedures could be employed with many times the number of students who were reported to have been involved, and in many times the number of schools.

There apparently was more willingness to try procedures which entail *adding* to the ordinary high school program than to implement those which entail *deletion from* it. Enrollment in two simultaneous classes, for instance, involves deletion in the sense that students who do it cannot follow the traditional pattern of class attendance. They must do one thing (independent work) in lieu of another (required class attendance). Very few schools tried such a procedure—and with only very few students. This was the case also with independent studies when that procedure was used to replace rather than to supplement course work.

It can be seen in Table 2 that where these procedures were implemented, reporting officers (usually principals) gave predominantly positive evaluations. Even in cases of acceleration (the most controversial of all special provisions for superior students) the positive evaluations exceeded the negative ones. (Parents and students who were involved in early admission to college or early graduation from high school give far more positive evaluations than principals do.) The overall picture presented in Table 2 is encouraging at least in the sense that principals who reported having implemented the procedures felt, in general, that their efforts had been worthwhile.

TABLE 1

Individualized Programs for Superior High School Students. Number of High Schools, Students and Teachers Involved

Program	*School Size*	*Schools Involved*		*Personnel Involved*	
		Number	Percent*	Number of Students	Number of Teachers
1. Try-out vocational experiences	Small	20	14.1	260	40
	Medium	25	19.5	657	58
	Large	10	23.2	496	29
	Total	55	17.6	1,413	127
2. Auditing classes	Small	17	12.0	87	19
	Medium	20	15.6	98	13
	Large	11	25.5	170	12
	Total	48	15.3	355	44
3. Enrollment in two simultaneous classes	Small	9	6.3	54	14
	Medium	11	8.5	27	10
	Large	2	4.6	3	2
	Total	22	7.3	84	26
4. Independent studies	Small	26	18.4	209	32
	Medium	31	24.2	306	83
	Large	7	16.2	84	15
	Total	64	20.5	599	130
5. Enrollment in college classes	Small	2	1.4	3	-
	Medium	9	7.0	28	-
	Large	8	18.6	146	-
	Total	19	6.1	177	-
6. Early college admissions	Small	6	4.2	7	-
	Medium	7	5.4	17	-
	Large	5	11.6	11	-
	Total	18	5.8	35	-
7. Early graduation from high school	Small	9	6.3	14	-
	Medium	17	13.2	63	-
	Large	12	27.7	148	-
	Total	38	12.2	225	-

*Percentages based on total number of schools classified as Small (N = 141), Medium (N = 128), and Large (N = 43).

TABLE 2

Individualized Programs for Superior High School Students: Principals' Evaluative Remarks

Program	*Percent of Evaluative Remarks Classified As:* Positive	Ambivalent	Negative	Other*
1. Try-out vocational experiences	74.5	9.8	1.9	13.8
2. Auditing classes	60.7	14.2	17.8	7.3
3. Enrollment in two simultaneous classes	72.4	10.4	6.8	10.4
4. Independent studies	62.7	13.9	16.2	7.2
5. Enrollment in college classes	60.8	13.1	4.3	21.8
6. Early college admissions	50.0	21.4	7.2	21.4
7. Early graduation from high school	30.7	28.2	30.7	10.4

*e.g., "Have not had time to evaluate." "This was done only as an emergency measure."

Activities listed in Tables 3 and 4 were classified as group programs based on more general thoughts about what superior students need. Most group activities were more commonly implemented than was true of the individualized programs. Larger schools more often made group provisions.

There were more frequent group provisions, in more schools, than was true of individualized provisions. There were, however, low proportions of the total number of reporting schools involved in any of the procedures. The only program that even approached use in half the schools was the NSF-type summer institute. This type of program is not actually offered by the school, but rather by colleges and universities which invite high schoolers to apply. Thus it appeared obvious that more-frequent implementation of such special programs is needed. In recent years, with the development of flexible-modular approaches in a number of Wisconsin secondary schools, possibilities for individualized study programs have been increased somewhat. Some very interesting prospects appear where teachers and administrators are making sincere efforts to implement flexible scheduling, continuous progress and independent study programs, and other related modern educational techniques.

The Laboratory has consistently worked to promote special programs and provisions for superior students in participating schools. Types of provisions listed in Tables 1 and 3 exemplify types suggested to schools by the Laboratory. Research reports and other publications from the Laboratory on this topic are abstracted below:

Brahe, Champ K. "College ahead of schedule: An evaluation of superior student acceleration." Unpublished Master's thesis, July 1967.

Thirty-three students who left high school early and went on to college were surveyed to discover results of acceleration. Their parents and

TABLE 3
Group Programs for Superior High School Students: Number and Percent of High Schools Involved

Program	*School Size*	*Schools Involved* Number	Percent
1. Short-term symposia, workshops, institutes (Less than 1 semester)	Small	29	20.5
	Medium	32	25.0
	Large	13	30.2
	Total	74	23.7
2. Long-term seminars (Semester or academic year)	Small	7	4.9
	Medium	29	22.6
	Large	13	30.2
	Total	49	15.7
3. Advanced classes which go beyond ordinary school offerings	Small	32	22.6
	Medium	39	30.4
	Large	20	46.4
	Total	91	29.1
4. Substitution of higher-level courses for those ordinarily taken in a given grade level	Small	37	26.2
	Medium	40	31.2
	Large	10	23.2
	Total	87	27.8
5. High school correspondence courses	Small	27	19.1
	Medium	35	27.3
	Large	16	37.2
	Total	78	25.0
6. College correspondence courses	Small	15	10.6
	Medium	10	7.8
	Large	7	16.2
	Total	32	10.2
7. Summer courses specifically for enrichment	Small	35	24.8
	Medium	58	45.3
	Large	27	62.5
	Total	120	38.4
8. Advanced placement (CEEB)	Small	4	2.8
	Medium	4	3.1
	Large	14	32.5
	Total	22	7.0
9. College summer academic institutes (*e.g.*, NSF institutes)	Small	42	29.3
	Medium	77	60.1
	Large	32	74.4
	Total	151	48.3
10. Parent participation in providing enriched educational experiences	Small	27	19.1
	Medium	35	27.3
	Large	16	37.2
	Total	78	25.0
11. Use of facilities outside of school during school time	Small	5	3.5
	Medium	28	21.8
	Large	10	23.2
	Total	43	13.7

TABLE 4

Group Programs for Superior High School Students: Principals' Evaluative Remarks

Program	Percent of Evaluative Remarks Classified As: Positive	Ambivalent	Negative	Other*
1. Short-term symposia	82.4	4.0	1.3	12.3
2. Long-term seminars	81.6	6.1	8.1	4.2
3. Advanced classes	86.8	6.5	3.2	3.5
4. Substitution of courses	77.0	6.8	4.5	11.7
5. High school correspondence study	66.6	10.2	15.3	7.9
6. College correspondence study	68.7	12.5	12.5	6.3
7. Summer courses	74.1	7.5	9.1	9.2
8. Advanced placement	63.6	18.2	9.1	9.1
9. College summer institutes	87.4	7.2	1.5	3.9
10. Parent participation	73.0	7.6	6.4	13.0
11. Use of facilities outside the school	69.7	11.6	9.3	9.4

*e.g., "Have not had time to evaluate." "This was done only as an emergency measure."

their high school principals also furnished opinions and information regarding the value of acceleration for the students involved. The findings overwhelmingly supported the use of acceleration when used with appropriate concern for individual student needs. Both academically and socially, the benefits for this group of students were very high. Parents, principals, and students agreed. Academic and social progress of the students substantiated opinions of those surveyed.

Dunford, George. "Practices and outcomes of an individualized program for a superior student." Unpublished Master's thesis, 1965.

This study directs attention to consideration of individualized programs for superior students. A case study approach was employed. Results suggest that a better use of case study methods should be used in dealing with superior students; that a perfunctory examination of student tests may result in overlooking areas of academic deficiency; that resources outside the school may not be adequately utilized; that individualization of education should be considered for all students; and that there is a danger in categorizing students—that there is a need for continued reconceptualization if one wishes to respond to the needs of a developing person.

Fredrickson, Ronald H. "Statewide implementation of classroom practices for superior students." *Exceptional Children,* October, 1968.

Abstract: 40 matched secondary school faculties were compared on implementation of recommended classroom practices for high-performing

students. A total of 20 experimental faculties had taken part in a statewide in-service program on guidance and education of gifted students. The remaining 20 control schools had not. Practices counted were cross validated. Experimental teachers used more within classroom activities. The study indicated that beginning teachers need special aid. When in-service training was focused on specific classroom practices, the results were the most successful.

Gilbert, Marlyn. "Enrichment as a means of providing for the academically superior in small public high schools." Unpublished Master's thesis, 1960.

This study examined methods for improving curricular offerings in small public schools. A review of the literature led to general recommendations germane to the education of academically superior students. Recommendations forwarded include adoption of enrichment programs by school administrators; the necessity for teacher training institutions to prepare teachers in utilization of enrichment teaching procedures; the sharing of innovative educational ideas through professional publications; and the need for joint cooperation between school and community in providing relevant information for student education. Special emphasis was placed upon adapting the enrichment program to the needs of the specific school district involved.

Hoedt, Kenneth C. and Rothney, J. W. M. "The high school principal and the superior student." *The National Association of Secondary School Principals*, March, 1963.

Forty-six high school principals were surveyed to determine their attitudes toward use of 20 practices commonly recommended for the improvement of education for superior students. At least 30 percent of the principals reported problems in implementation of 18 of the procedures, and none of the procedures was supported strongly by all principals. Across all 20 practices, the most common reasons given for not implementing practices were faculty opposition, undesirable effects on students, and lack of staff competent for implementation. Practices which deviated seriously from normal school practices (*e.g.*, acceleration, modifications in class attendance, unusual course loads) were endorsed by fewer than half the principals; whereas practices which were less deviant were usually endorsed.

Hogan, William F. "An evaluation follow-up of students who took college courses while still in high school." Unpublished Master's thesis, 1966.

During the 1964-65 year, 46 high school students enrolled part time in college courses at 14 colleges in Wisconsin. They completed an aggregate total of 99 courses in 10 subject areas, taught by 72 instructors. Courses most frequently taken were in foreign languages, social studies, mathematics, and chemistry. College enrollment was arranged for the students in response to individual needs for advanced work in some subjects. In general, students were given released time from high school to attend college classes.

About 95 percent of all grades received by the student were either A or B. None were lower than C. Students' opinions about the college experience were highly favorable, both in terms of the academic work and in terms of social and extracurricular experiences. Of the 61 college instructors who responded to an evaluation questionnaire, all gave favorable opinions of the practice. 69 percent ranked the high school students in the top 10 percent of their college classes, and 90 percent felt the students showed maturity levels equivalent to college students. Oddly enough, high schools were sometimes reluctant to allow credit for courses taken in college; whereas colleges were not.

Hunt, David A. "The identification and description of special provisions for enriching the educational experiences of superior students." Unpublished Master's thesis, July 1964.

Wisconsin high schools were surveyed to determine what special attempts were being made to meet unique educational needs of superior students. Results indicated that individualized provisions were very infrequent. Although some individualized provisions are probably needed for most students in the top 5 percent of high school performance, not more than a fraction of 1 percent received such treatment in reporting schools. Practices or procedures which involved deviation from standard school procedures were exceptionally rare, but where they had been implemented, principals reported favorable results.

Specific procedures identified in the study are described more fully in the two reports listed below:

Kovan, Georgia G. "Acceleration and early admission to college of superior high school students." Unpublished Master's thesis, 1966.

Thirty Laboratory participants who completed high school one or more years ahead of schedule between 1958 and 1965 were compared with a matched group of 30 students who completed high school in normal fashion. All comparison group students enrolled at The University of Wisconsin, and 26 accelerates also enrolled there. A follow-up study revealed that the accelerates were academically superior to the comparison group in college. Comparison group members reported encountering more academic difficulty in college, and their grades were lower. Activity participation and social satisfaction were comparable in the two groups. Accelerates received more financial aid and less often held part-time jobs while attending college. Both groups established very good scholastic records. The study tends to discount some common arguments against acceleration.

Peterson, Terrance L. "Effects of counselor conducted in-service training sessions in promoting a desired teacher practice." Unpublished Ph.D. Dissertation, 1970.

285 teachers, counselors and administrators from 15 schools participated in group training procedures designed to promote use of independent study contracts with superior students. Three separate methods of training were compared to determine which led to the most follow-through action on the part of teachers. Results indicated that a highly structured small group format was most effective, and that instruction on exactly how to implement independent study was important to follow through. An example of one of the contracts used is in the Appendix.

Rothney, J. W. M. "Fifty suggestions for providing superior students enrichment and acceleration." *The Mathematics Teacher* (India), May-June, 1966.

(See Appendix)

Rothney, J. W. M., and Cody, J. J. "The superior student and physical education." *Newsletter,* Wisconsin Association for Health, Physical Education, and Recreation, October 16, 1961.

A survey of 237 students in grades 9-11 revealed that about half of all respondents would not take Physical Education courses if they were not required. The chief reason was that they did not think physical education classes were as important as academics. Many cited their own sports

and physical activities as adequate for their physical development. Most did not see physical education classes as centered on improvement of physical skills. Implications for teachers of physical education were presented.

Rothney, J. W. M., and Sanborn, Marshall P. *Identifying and educating superior students in Wisconsin high schools,* Research and Guidance Laboratory for Superior Students, The University of Wisconsin, 1967. 49 pp.

This booklet describes 20 individualized approaches high schools have found useful in providing for educational needs of superior students.

Rothney, J. W. M., and Sanborn, M. P. "Promising practices in the education of superior students." Cooperative Research Project D-119; U.S. Office of Education, June, 1968.

Final report of a research and demonstration program concerning individualized procedures for superior high school students.

Staskal, Edward M. "A study of provisions made for academically talented students in social science programs." Unpublished Master's thesis, 1967.

Development of a method for determining the effectiveness of existing social science programs and development of a "model" for educational planners interested in fostering the intellectual maturity of academically talented students in the social sciences was the goal of this study. Discussion was centered on talent identification procedures and purposes, curricular provisions for the academically talented, and types of extra class activities currently employed in secondary schools. The latter section of this study proposes criteria for identifying the academically talented, provisions for curriculum and classroom implementation, and a proposal for improving administrative arrangements in teaching the social sciences.

Steede, William D. "Educational decision making by average secondary school students as compared to superior students." Unpublished Master's thesis, 1961.

An experimental group of ninth-grade superior students (N = 100) were contrasted with a control group of ninth-grade average students (N = 50) on the basis of classification of student opinions toward 15 education procedures. Areas elicited included enrichment, acceleration, ability grouping, post-high school planning, leadership, and courses in human relations. Results indicate that average students felt that they were capable of making their own decisions relative to the 15 educational procedures and that they are willing to do more than they are usually requested to do. Some provisions and considerations afforded superior students could be afforded average students.

VandeWater, Arlan. "The influence of total teaching experience upon the classroom practice performed for superior students." Unpublished Master's thesis, May 1963.

1013 teachers from 40 high schools were asked to respond to inventories identifying superior students and to indicate whether they used any of 26 recommended teaching practices. Conclusions drawn suggest that academic subject-matter teachers employ more practices with superior students than nonacademic teachers and that the length of teaching experience was positively related to the number of teaching practices used for superior students. The greatest difference between teaching practices

is found between first-year personnel and those with three or more years of experience. First-year teachers employ less-diversified approaches.

There has not been enough research work done by the Laboratory on evaluation of special educational provisions for multipotential students. If we can judge from available literature on the topic, there has not been much evaluative research done elsewhere either. This problem should be solved. In current times there is public concern about accountability of educational institutions. Although this concern may wax and wane as a matter of public interest, it should never wane as a matter of interest among professional educators. The kind of research that needs to be done is action research, carried on in practical school situations, aimed at evaluation of educational procedures in terms of goals achieved, and not merely in terms of provisions made or techniques used.

Sometimes, through research, we need to test basic assumptions which underwrite school policy and practice. Vertical acceleration, for instance, is generally regarded as a bad idea. Three of the studies abstracted in this section, however, provide very strong support for acceleration as an appropriate and constructive measure to take with some students. Examination of cases involved in these studies shows both academic and personal-social benefits of acceleration. Often students who should be accelerated are held back because of explicit policies or implicit assumptions which, though they may be generally valid, are not valid in exceptional situations. Sometimes students who should be accelerated are held back because, although they show very strong scholastic competencies, they are not cooperative or socially active in high school and are consequently regarded as "immature." In such cases the "immature" behavior may actually be strong evidence of the need for acceleration.

Action research would also help encourage innovation and improvement in school programs. When there is no evidence to support change, change is unlikely to occur. Our studies of Wisconsin schools reveal that special programs for multipotential students which entail any significant deviations from normal school practice are seldom implemented. This is unfortunate, since exceptional children need exceptional provisions.

It is revealing to examine different points of view as to why unusual procedures are not more often implemented. When administrators were asked to give reasons (Hoedt and Rothney, 1963) they said that teachers did not have skills and competencies required to make such provisions. On the other hand, when teachers were asked (Peterson, 1970, Vande-Water, 1963) they said such provisions were impossible because of lack of time, facilities, and school resources. Experiences in a variety of school situations lead us to question the validity of either of these points of view. Teachers can learn to do new things, and will when they work in settings where exceptional methods and innovations are encouraged. Facilities and resources are important, but lack of them does not render improvement of programming impossible. Some schools with very exciting programs have ordinary facilities, and some with the ultimate in facilities have very ordinary programs.

We need to reexamine criteria used to determine success of programs for top students. Too often such criteria are limited to school grades and test scores. Reports of many hundreds of Laboratory participants in post-high school years, however, indicate that these criteria are inadequate. The fact that a student is getting good grades and keeping out of trouble is not necessarily a sign that he is profiting much from his educational program. The multipotential student will usually provide us with the illusion that we are giving him a good program if we limit ourselves to grades, test scores, and cooperative behavior as criteria. When a student shows high competency in academic skills, curiosity, wide interests, and willingness to learn, we should look to other goals than the usual ones we have for high school students. Broadly speaking, we should look for methods whereby we can shift responsibility for the quality of his experience from our shoulders to his. To do this, some solid experience with independence and with the consequences of independence is required.

VI

COUNSELING AND GUIDANCE PROCEDURES

Most of the studies abstracted in this section were attempts to evaluate specific guidance activities, or attempts to describe models for guidance work together with some information about possible results. A few reports are concerning methods of analyzing student documents and data. Studies similar to these are abstracted in the section on Descriptions of Superior Students. Also included in this section are evaluations of parental contacts, applications of specific guidance procedures aimed at immediate outcomes, and studies of long-range results of the Laboratory program. We have listed, but not abstracted, published reports describing the Laboratory program. The introductory section of this booklet covers main points contained in other published descriptions:

Alexakos, Constantinos. "The effectiveness of certain guidance practices specifically designed for academically superior students." Unpublished Ph.D. Dissertation, 1965.

Post-high school education and career progress patterns of 214 Laboratory participants were compared to those of a matched group of University students who did not participate in the Laboratory. Two and three years after high school the Laboratory participants were shown to be more persistent in higher education, receiving more scholarship aid for college, and in more honorary and leadership positions. They also were different on reasons for dropping out or not attending college, plans to re-enter college (if not enrolled), and long-range plans. It was concluded that participation in the Laboratory was helpful to superior students insofar as the criteria under study were concerned.

It was suggested that guidance practices similar to the ones employed at the Laboratory might be profitable for all high school students who perform in the upper 20 percent in their schools.

Atkinson, Donald R. "Effect of selected behavior modification techniques on student-initiated action." *Journal of Counseling Psychology,* In press.

The purpose of this investigation was to determine if selected behavior modification techniques could be used effectively by counselors to promote student self-initiated action on counselor-suggested activities. Ninety-four high-achieving tenth-grade pupils were randomly assigned to four treatment conditions: (1) cue presentation plus systematic reinforcement; (2) video-tape social model plus reinforcement; (3) role playing plus reinforcement; and (4) control procedure. Students in treatment groups 1 and 2 reported taking action on a greater proportion of counselor-suggested activities than did students in the control group. Role playing was found to be no more effective than the control procedure. Subjects reported counselors' activities had little or no effect on their decision to initiate action.

Atkinson, Donald R., Davis, Jerry L., and Sanborn, Marshall P. "Behavioral techniques: Effective with superior high school students?" Currently under consideration for publication by *The School Counselor.*

Three orientation methods were used to prepare superior high school seniors for educational-vocational informational interviews. Two behavioral counseling techniques employed in group settings, cue presentation

plus systematic reinforcement and social modeling plus reinforcement, were compared to a "traditional" group discussion approach. The first treatment was found to be the most effective method for increasing student information-seeking questions. Both behavioral methods were associated with larger amounts of criterion behavior than the "traditional" method. These findings illustrate the potential of behavioral techniques with highly able young adults.

Atkinson, Donald R., Peterson, Terrance L., and Sanborn, Marshall P. "The effect of class visitations on superior students' concepts of a university class." *Journal of College Student Personnel*, In press.

This study was an attempt to determine if the practice of class visitation was associated with changes in high school students' concepts of university instructors, students, and classroom environments. Pre- and post-visit concepts of a university class held by ninth- and eleventh-grade students were analyzed together with those of a comparison group. The results suggest that ninth graders, after one class visit, are more likely to change their concepts than are eleventh graders, who have had two previous visits to a university class. Both groups changed their concepts more than the comparison group. Implications for college visitation and orientation programs are discussed.

Bailie, Royal E. "Use of rating scales in analysis of personal documents of superior high school students." Unpublished Master's thesis, July 1960.

This study presents a two-way schematic for analyzing student documents. Three raters reacted to 17 personal categories on the basis of whether students were descriptive, critical, or appreciative of items listed. Results indicate that the greatest interrater reliability exists when subjective content is evaluated, whereas disagreement between raters exists when critical and appreciative attitudes are examined. This method of evaluation appears to be useful as an auxiliary counseling aid but not as a prime source of information.

Brahe, Champ K. "Student actions on counselors' suggestions for superior high school students." Unpublished Ph.D. Dissertation, 1970.

This study was to investigate the extent to which superior students would interact with high school teachers on specific recommendations given by counselors at the Laboratory. 85 ninth- and eleventh-grade students received letters from their counselors which contained specific recommendations counselors had made to their teachers, together with instructions and encouragement for the student to take responsibility for initiating action on the recommendations. Extent of action subsequently taken was determined in follow-up interviews with the students and their teachers. Results indicated that the method led to action on as many as 75 percent of counselor studies; whereas previous methods of recommending action to teachers only resulted in less than 50 percent follow-through action.

Camp, W. L., and Rothney, J. W. M. "Parental response to counselor's suggestions." *The School Counselor*, January, 1970.

A total of 416 suggestions were offered by counselors to parents of 47 boys and 51 girls. Suggestions were intended to stimulate action in development of independent learning, consideration of careers, improving reading habits, participating in activities, changing study habits and school course loads, planning beyond high school, etc. Parents were later surveyed to discover what actions they took on the suggestion.

Their responses were verified by means of independent reports from their children. Results showed the utility of parent-counselor conferences wherein the counselor presents specific ideas for parents to follow through on. Most parents will respond when counselors provide some direction in the form of specific suggestions based on knowledge about the child.

Henjum, Raymond J., and Rothney, J. W. M. "Parental action on counselor's suggestions." *Vocational Guidance Quarterly*, September, 1969.

The study was designed to determine differences in help given by parents to children who participated in the Laboratory program from help given by parents who were not associated with the program. Parents of 97 superior students who participated in the Laboratory were compared with parents of 91 students who showed superior performances but were not Laboratory participants. Parents who had discussed their children annually with laboratory counselors took more active roles in children's occupational planning than had parents in the comparison group. College-educated parents in both groups were more active than noncollege parents, the latter tending to rely more heavily on school personnel for educational-vocational guidance. The study confirmed other findings (Jessell and Rothney) that when specific suggestions are made to parents by the counselor, parents are likely to follow through with specific action.

Herbert, Craig. "A case-study approach to the understanding of guidance activities for individual development." Unpublished Ph.D. Dissertation, 1967.

Case studies were used to explore relationships among functions performed by school counselors, teachers, and parents as these affected development of students throughout high school and college.

The implications of this study for the school counselor suggest that he is a member of a guidance "team" which uses both indirect and direct procedures to facilitate individual development; that is, the functions they perform are related to those performed by other persons (teachers, parents and peers). Counselors can influence their own roles or functions by changing those of others. During conferences with parents or teachers, counselors might influence these persons to meet those needs of students which they are best able to meet. This would allow counselors to perform other functions in direct relationships with the student.

The investigator concluded that school counselors did perform important functions relative to individual development. However, these functions did not appear to have the extensive effects upon that development which proponents of school counseling often claim. Further research based upon the implications suggested here may give more order and meaning to the field of school guidance than presently seems to exist. Hopefully, this may lead to a clearer definition of the school counselor's role and function; more cooperation among those concerned with the goals of guidance; more functional guidance procedures, and greater understanding of the purpose of guidance by counselors, teachers, parents and students.

Jessell, John C. and Rothney, J. W. M. "The effectiveness of parent-counselor conferences." *Personnel and Guidance Journal*, October, 1965.

Reports of action taken by 95 sets of parents of high school seniors to assist their childrens' development that resulted directly from parent-counselor conferences were obtained and examined. The conferences had been held annually over the three-year period of the students' attendance at high school. Parents' reports were compared with those obtained from the students by use of parallel report forms in a manner that

prevented previous discussion of the questions. The evidence from parents' and students' reports suggested that when counselors knew the students well enough to offer specific recommendations for parental consideration (especially about reading habits and planning for further education, and particularly to college-education parents) they were most effective in stimulating action.

Koeppe, Richard P. "The effect of a one day application of guidance and counseling procedures upon selected ninth-grade students." Unpublished Ph.D. Dissertation, 1961.

A follow-up of 75 ninth-grade Laboratory participants and their parents and teachers was conducted to determine whether the students' day at the Laboratory led to changes in students' attitudes and/or behavior. Students reported changes in the extent to which they discussed career plans and increased time spent in reading and study. Their teachers reported increases in students' class participation, time spent in study, thoroughness of their work, and requests for enriched assignments. Parents reported increases in the extent to which their children spoke with them about educational and vocational plans. No changes about self-attitudes were detected. It was concluded that a one-day application of guidance services resulted in immediate changes in behavior of the students.

Rothney, J. W. M. "A statewide approach to discovery and guidance of superior students." *School and Society,* Summer, 1961.

Rothney, J. W. M. "Improving reports to parents." *The National Elementary Principal,* May 1966.

The paper suggests improved procedures for providing parents with information and viewpoints regarding their child's development in school. The author suggests clearer use of language, replacement of labels with analytical terms which lead to action, employment of more longitudinal data so that suggestions for next steps will be based on a developmental view of the child. The discipline of such a reporting scheme ought to lead to better parental understanding of what to expect from the school, and more effective school efforts to meet those expectations.

Rothney, J. W. M. "Guidance laboratory for superior students at the University of Wisconsin." *Gifted Child Quarterly,* Spring, 1958.

Rothney, J. W. M., and Sanborn, Marshall P. "Wisconsin's research through service program for superior students." *Personnel and Guidance Journal,* March, 1966.

Rothney, J. W. M., and Lewis, Charles W. "Use of control groups in studies of guidance." *Personnel and Guidance Journal,* January, 1969.

Problems in the interpretation of results of studies in which control groups are used are illustrated in a follow-up study. Subjects who had been counseled over a four-year period at the Research and Guidance Laboratory for Superior Students at The University of Wisconsin were followed up four years after high school graduation and their performances were compared with those of the members of a control or comparison group. The results are presented and the adequacy of the control group technique is discussed. The validity is questioned of the commonly accepted procedure of selecting control group subjects on the basis of their current comparability with experimental subjects without adequate history of their development toward that status.

Rusk, Harold C. "Guidance suggestions to the schools of superior high school students." Unpublished Master's thesis, 1967.

The study was an attempt to assess the value of Laboratory suggestions to students and their schools regarding career development and choice of individual students. Reports of 80 students, three years after high school graduation, furnished the data. Although most evaluations were positive, students from small high schools reported more positive follow-through and results of suggestions than did those from large high schools. Most favorable attitudes about the previous guidance suggestions came from persons whose current academic majors and career choices were closely related to the suggestions.

Smaby, Marlowe H. "An evaluation of three systematic interview involvement procedures for accomplishing guidance goals." Unpublished Ph.D. Dissertation, 1970.

Systematic goal-setting techniques were utilized during counseling interviews with 51 ninth-grade students from 17 schools to encourage student action on ideas to improve their educational and social development. Three separate techniques were evaluated in terms of student-initiated action taken after the counseling sessions. Results indicated that joint planning with the students, particularly when they could see examples of actions suggested for previous students, led to more satisfactory follow-through than has been the case when counselor suggestions are made to school staff members but not to the students themselves.

Smith, Marcia Jule. "An evaluation of high school guidance services by more successful and less successful superior students." Unpublished Master's thesis, 1967.

Reports from 348 college students were used to determine their judgments about effectiveness of guidance practices in high school. The students were surveyed during their first year after high school, and again during the fourth year after high school. Half of the students were Laboratory participants and half were other students matched on scholastic ability, performance, home, and high school background. During the first year after high school, most students rated high school counseling inadequate. As time elapsed from the first year to the fourth year after high school, all students tended to look on high school counseling more favorably. Most-successful students cited lack of help in vocational choice and knowledge of their own strengths and potentialities. Less-successful students felt counseling was least helpful in decision making and personality development. As time elapsed, successful students marked more positive aspects of high school counseling, while the less-successful group did not.

Temple, Robert T. "An analysis of the written responses of a selected group of senior students." Unpublished Master's thesis, 1961.

Written responses of 124 high school seniors were analyzed to determine client satisfaction with the Research and Guidance Laboratory Program for Superior Students. Students were requested to "write a statement as long or short as you like on how you feel about your experiences at the Laboratory." The resultant 563 written reaction statements were classified into 9 categories. Student response to Laboratory participation was decidedly positive. Only 8 of the 124 participants indicated negative perceptions. Suggestions for clarification of Laboratory purposes and for defining counseling activities are discussed.

Whalen, Joe M. "Superior students' opinions of counseling—use in evaluation and some contributing factors." Unpublished Master's thesis, 1968.

This study examined the follow-up questionnaire response of 132 college freshmen that had participated in the Research and Guidance Laboratory Superior Students counseling program. Data referent to students' satisfaction with their college choice; high school counseling services afforded them that were most helpful; and suggestions for improving high school counseling services were reviewed.

Results indicate that the amount of help received from high school counseling and satisfaction with college choice are not significantly related; that more than one-half of the sampled students had favorable attitudes toward high school counseling and that they would choose the same college again. Approximately one-third suggested that high school counseling could be improved in helping students "analyze" themselves, while one-fourth indicated a desire for more help in developing "an understanding of my interest."

One of the persistent problems in counseling and guidance is that of evaluation. Both total programs and specific activities within programs need to be assessed in terms of results achieved. Laboratory research activities have focused on both types of evaluation.

When the total program is under study we usually find it necessary to state outcome criteria in very broad terms. Gross data such as educational and vocational status or civic and social participation of persons involved in the program are used to determine how well broad guidance goals are being met. Material in the following section (Post-High School Choices and Achievements) provides examples of this kind of research.

Studies by Temple, Whalen, Alexakos, and Smith above are also broad follow-up studies, but were included in this section because they contained data on student opinions of the counseling and guidance they received while in high school. These studies showed results favoring Laboratory participants over a "matched" comparison group of high-ability students at The University of Wisconsin when criteria were persistence in college, amount of financial aid received for college, and honorary and leadership achievements during college. The students involved gave generally favorable opinions of guidance and counseling experiences they had while in high school.

A difficulty with evaluative research of this type is that the broad outcomes used as criteria are related to other factors than guidance. Persistence in college, for instance, may be affected by the draft laws, availability of financing, or other factors outside the control of guidance people. Performance criteria are likewise affected by many things. Researchers who attempt to account for such factors often do so by drawing comparisons between a group of students who received certain counseling and guidance experiences and a similar group who did not.

But drawing comparisons between groups of students is, at best, a questionable procedure in evaluation of guidance. In guidance we are concerned with longitudinal development of individuals. Goals people set, directions they come from, and directions they take, are significant. At any given point in young people's lives we may select "matched" groups of individuals who appear to be similar, but who actually are not. The assumption made in such a procedure is analogous to the assump-

tion we would make if we were to declare that all the people at a busy crossroads intersection at a given moment had come from the same direction. Rothney and Lewis (1969) have discussed this issue adequately enough to represent the current Laboratory point of view. We have discontinued the annual practice of selecting a comparison group and are searching for better ways to evaluate guidance services.

An early study by Koeppe, the group of studies focused on parent contacts, and several recent studies (*e.g.*, Atkinson, Brahe, Davis, Peterson, Smaby, Rusk) seem to illustrate promising initial steps in evaluation. Most of these studies have involved assessments of actions taken by students, parents, and teachers as a result of specific counseling or guidance experiences. We are interested in these studies because they provide some evidence as to the immediate impact of guidance services. The following observations have accrued from them:

1. The importance of direct work with parents cannot be overestimated. Parents will respond to suggestions offered them during counselor-parent conferences. The more concrete the ideas they derive from the conferences, the more likely they are to follow through with positive action. Studies at the Laboratory indicate that parents will take more active roles in the guidance of their children when regular contacts with the counselor are provided.

Members of the Laboratory staff have developed a system for improving parent contacts. The counselor who works directly with an individual student makes notes of matters to bring to the parents' attention. (Students are informed ahead of time that counselors will be visiting with their parents in the near future.) Together with these notes the counselor records specific ideas or suggestions for follow-through which should be brought to the attention of the parents. A student contact is never scheduled without also scheduling a parent conference, and subject matter for the parent conference is based, for the most part, on the most recent student contact. The counselor presents parents with thoughts he formulated while working with their child, and he records their reactions and stated intentions on a form designed for this purpose (see Appendix). The record is kept in the student's cumulative folder. Therefore, in subsequent conferences with either the student or the parents, the counselor can check to determine what actions were taken and what results accomplished.

Research done at the Laboratory concerning parent contacts has utilized this system. Results have emphasized the importance of working with parents, even during the students' high school years, as a matter of routine. Guidance experiences of the students can be improved when parents' interests and resources are systematically put to use.

2. During the course of his work with high school students the counselor often encounters situations which require some change in the students' environment and activities if guidance and educational needs are to be fully met. This is true in a general way, and it is especially true in the case of students whose needs differ substantially from typical high school students. Experiences at the Laboratory have led us to believe that work with multipotential students will nearly always require

the counselor to solicit action on special measures to meet student needs.

We have already discussed the importance of parental involvement. A second important resource is the teaching faculty. Studies reviewed in the previous section (Classroom and Curriculum Provisions) provide evidence to show that individualized provisions for superior students are not frequent in Wisconsin secondary schools. Counselors who recognize individual characteristics and needs which require individualized school provisions must learn how to get action from others who control the students' school life and experience.

Peterson's approach to short-term teacher training sessions led to promising results. Many participating teachers were eager to hear about methods which may help them draw top students into exciting and challenging work beyond usual classroom expectations. They demonstrated that they will respond with action to well-organized presentations which are adequately founded on identified student needs, and which give them practical examples and techniques for meeting those needs. Counselors who assume appropriate responsibility for soliciting teacher action should be able to evaluate their programs partly in terms of classroom policies and practices they helped establish.

Counselors may have to help teachers and administrators get together on what is possible within the structure of teaching talent and facilities the school has (see Hoedt & Rothney, 1963; VandeWater, 1963; Peterson, 1970).

3. Another resource for getting action—one which may often be overlooked—is the student. Brahe examined the counselor-student-teacher-parent communication system in terms of its effect on action. Results of his study led to the hypothesis that needed action could be more often achieved if students were given more responsibility for initiating it. This finding was later substantiated by Davis. Follow-through action on counselor suggestions for special provisions was increased dramatically when students were informed of counselors' communications with teachers and urged to take initial steps to get started with teachers on follow-through activities. Action was further increased by introducing brief follow-up interviews with the students a few weeks after suggestions were made.

Smaby provided another kind of information on action-getting techniques. Students who help formulate ideas for special activities are more likely to help initiate action than those who do not get involved in the formulation of suggestions. His study as well as one completed by Atkinson also demonstrated the usefulness of providing students with concrete examples of actions taken by other youngsters, and systematic verbal encouragement to think seriously during counseling interviews about possible follow-through activities.

It seems obvious from the results of this series of studies that implementation of change is better accomplished when students are aware of suggested changes than when they are not. Students will take considerable responsibility to initiate follow-through activities with school faculty members if counselors encourage them to do so. The counselor can assist the student by informing faculty of ideas generated in his contacts with the students and urging them to help students refine and follow through on proposals which show potential. In this manner the student

may learn better how to become responsible for the quality of his own experience in school. Ultimately this is one of the main things he needs to learn, both for life in school and for life outside. As one high school student in the Laboratory program said, "A free person not only takes responsibility; he initiates responsibility."

4. Most of the studies in this section point up the importance of a team approach to guidance work. The counselor may do well to regard all members of the team—teachers, parents, administrators, and the students themselves—as equals in terms of their responsibility for active follow-through of guidance and counseling activities. A team usually operates best when every member knows what other members are up to. The importance of good communication among the members cannot be overemphasized. The counselor should devise methods of providing equal information to equal members of the team, and of stimulating their communicating with each other directly. He should avoid, as much as possible, the trap of becoming a go-between for persons who seldom engage in direct communication.

VII

POST-HIGH SCHOOL CHOICES AND ACHIEVEMENTS

At the time of this writing a comprehensive analysis of follow-up data on Laboratory participants is far from complete. This task cannot be accomplished until larger numbers of students finish post-high school training and become established in the world beyond school.

It is possible, however, to report some gross data concerning the students' college years. About 98 percent have gone on to college immediately after high school graduation. Of these, about 68 percent enter higher education programs in Wisconsin. About 55 percent enroll in The University of Wisconsin and about 13 percent in other private and public institutions in the state. Of those who go out of state, most attend private colleges and universities. About 10 percent attend major public universities in other states, and almost none attend minor public colleges out of state. In recent years there has been a trend for more Laboratory participants to enroll in the State University system of Wisconsin.

Generally speaking the students have continued to do outstanding scholastic work in college. Figures below show four-year overall grade-point averages established by 354 students in various types of higher education institutions. The students involved in this study graduated from high school in 1963 and 1964:

Group Attending:	Number	Mean 4-Year GPA
Wisconsin State Universities	53	3.16
Church-Affiliated Colleges	29	3.27
Small Private Colleges	43	2.90
Eastern Universities	17	3.01
Large Out-of-State Universities	40	3.16
University of Wisconsin	174	3.01

Thus, in general, this group of students has maintained slightly better than a 3.00 average.

There is considerable consistency of performance across different types of colleges. This does not necessarily mean, however, that difficulty levels are equivalent in the various colleges. Rather, it is likely to indicate that whatever college choices the students made were generally appropriate insofar as their challenge and achievement in college classes was concerned. It could also indicate that this group of students achieves to an "honors" level within whatever context they work, adjusting themselves to the levels expected at the institution they attend. We know from standardized test scores that there are markedly different levels of scholastic ability associated with groups attending different college types. Mean scores on the *Terman Concept Mastery Test,* for instance, ranged from 97 for the group attending eastern universities down to 55 for the group attending Wisconsin State Universities. (For general Laboratory test norms, see the Appendix.)

Only a very small percent of the students have encountered serious academic difficulty in college. Based on figures from the 1961, 1962,

and 1963 graduates from high school, only about 1 percent experience academic probation during their freshman year. More than 67 percent receive baccalaureate degrees in four years—this rate being substantially higher than that for general college populations.

More than 70 percent of the students enroll in graduate and professional schools after their undergraduate work. The proportion of men who do this is greater than the proportion of women, but both sexes (women more than men) far exceed general college populations in tendency to go on to graduate and professional study.

When Laboratory participants have been compared with top college entrants who did not take part in the Laboratory, results have favored the Laboratory group on 22 of 27 comparisons involving academic accomplishments, individual accomplishments other than academic, clarity and purposefulness of goals, and participation and leadership in social and cultural activities.

Thus, in gross terms and according to commonly used criteria for college follow-up studies, we may say that Laboratory participants have continued over at least eight years to show outstanding performances expected by their junior high school and high school faculties who selected them. There is serious question, of course, as to whether the criteria commonly used as yardsticks for post-high school accomplishments are the ones we should be using. Some students think they are not. We expect to provide more detailed study addressed to this question in the future.

Studies abstracted on the following pages were all concerned with post-high school behavior of the students. Most were attempts to relate data collected during high school to those collected in later years. Problems of predicting (understanding) college performance, choice of major field and career choice on the basis of high school performances and preferences are the primary types of research included. One study involved students' evaluation of college experiences:

Alexakos, C. E. "Predictive efficiency of two multivariate statistical techniques in comparison with clinical predictions." *Journal of Educational Psychology,* 1966, Vol. 57, No. 5, pp. 297-306.

The college grade-point average of academically superior high school students was predicted by statistical methods (regression and discriminant analyses) on the basis of 19 independent variables, and by clinical counselors on the basis of all information collected through counseling interviews and testing during the four high school years. The obtained results indicated that the statistical were slightly superior to the clinical predictions; however, both types of prediction were not as efficient as one would wish them to be. Weighed combinations of the three methods increased the efficiency by 37 percent in the least favorable case and by 106 percent in the most favorable. It was concluded that combinations of clinical-statistical predictions could be more efficient and more useful in counseling college-oriented students than any single method.

Alexakos, C. E., Stankowski, W. M., and Sanborn, M. P. "Superior high school students' thoughts about the future and their later college achievements." *Vocational Guidance Quarterly,* June 1967.

Essays entitled, "The Future as I See It, and My Place in the Future," written by 73 students in grade 12, were analyzed to determine degree of

optimism, sense of need for higher education, humanistic ideals, concern for society, materialism, leadership intentions, marriage goals, immediate goals, and long-range goals. Results of this analysis were correlated with college scholastic performances. The students showed more optimism about their own personal futures than about the future of the world. The self-view was the better predictor of later academic success. In general, patterns of attitudes and beliefs expressed in the essays correlated with college grades as well or better than patterns of high school grades and test performances previously studied. Superior students' college performances appeared to be highly related to expressed ideals, concerns, and attitudes investigated.

Ammerman, Garmen K. "Relationships between expressed preferences of superior high school seniors for major subject fields and their occupational choices as college sophomores." Unpublished Master's thesis, 1965.

115 students were followed up two years after high school to discover extent of consistency between expressed high school preferences for subject fields and actual major fields and career choices in college, and to discover whether academic performance was related to students' consistency of choice and satisfaction with choice. Over half of the students whose grades were 3.5 or higher (4.0 scale) had remained in a major field choice related to their original subject fields preference established in high school. As the GPA lowered, more girls were undecided about major field and occupational plans, the largest percent of "undecided" being in the 1.5-2.4 GPA range. This was not true of boys, among whom the "undecided" were widely dispersed across GPA levels. There were more shifts of preference from science to non-science fields than the reverse. Sex-related preferences for subject fields are also described in the report.

Bradley, Richard W., and Sanborn, Marshall P. "Using tests to predict four year patterns of college grade point." *Journal of College Student Personnel*, March, 1971.

This study was to determine whether a longitudinal record of high school test performances would be indicative of a four-year composite of both academic and nonacademic accomplishments of college students during their higher education. Test scores obtained during high school on aptitude and scholastic ability measures were analyzed in relation to a broad criterion of college accomplishments in academics, activities, leadership, and future goals of 367 top students from 70 Wisconsin communities. The use of longitudinal predictors and a broad spectrum composite criterion provided better than usual opportunities for tests to indicate their effectiveness. Results showed little promise for use of test scores in forecasting excellence in any of the criterion areas. Meaningful relationships could not be established between the high school test results and either academic or nonacademic college accomplishments. Findings were thought to show the need for guidance people to establish other measures to use in advising college-bound students. At the college level, as well, it will become increasingly important for admissions people to learn to identify different predictor measures which can be obtained during high school.

England, Janet E. "Career choices of superior students." Unpublished Master's thesis, 1966.

Although in another study (Sanborn) career choice was shown related to whether or not students were successful (had passing averages) in college, this study did not reveal meaningful relationships between career choice and different degrees of success.

Fluck, Ellen D. "Relationship between choice of undergraduate major and post-baccalaureate work of counseled and noncounseled superior students." Unpublished Master's thesis, 1966.

A group of 127 superior students who graduated from college within five years after high school were surveyed to determine consistency of college major and post-college job or graduate study. Responses of the group were compared to those of a matched group of 58 students who did not participate in the Laboratory program. The total group showed considerable career choice consistency over the period of study, but the Laboratory participants were more consistent than the comparison group. In both groups, a large proportion of subjects went on to graduate study, but more men than women did this. It was suggested that if future study continues to show consistency of field and satisfaction with it, then consistency in earlier years may be regarded as desirable and economical.

Holmquist, Christine Helen. "Superior students' reactions to the University of Wisconsin." Unpublished Master's thesis, 1968.

161 superior students who ranked in the top half of the Laboratory population on verbal reasoning performances and Laboratory predictions for academic success, who graduated from high school in 1961-65 and who attended The University of Wisconsin, were surveyed to determine attitudes about the University. The majority were highly satisfied with academic and nonacademic aspects of the University. In general they were maintaining high academic averages. 10 percent were 4.00 and more than 70 percent were 3.00 or higher, but they reported difficulty in some areas of study, particularly because of inadequate study skills and poor motivation to achieve in some courses. This group did not notice competition in their classes, and generally they reported more informal, less-organized and more satisfactory social life than in high school. They tended to look within themselves for chief sources of inspiration and encouragement.

Houg, Martin M. "Vocational choices of superior high school students—a longitudinal study." Unpublished Ph.D. Dissertation, 1970.

Records of 279 male students were analyzed to identify consistency in career choice over a seven-year period and to predict choice categories four years after high school graduation. The study showed that although patterns of choice shown by the students could be described *ex post facto*, statistical methods used did not lead to accurate predictions of future career choices.

Lewis, Charles W., Bradley, R. W., and Rothney, J. W. M. "Assessment of accomplishments of college students four years after high school graduation." *Personnel and Guidance Journal*, April 1969, pp. 745-752.

Procedures are described which are used in developing and testing a method for making global assessments of students' college accomplishments four years after high school graduation. The objectives of colieges as stated in their bulletins are usually classified into such categories as academic accomplishments, accomplishments other than academic, clarity and purposefulness of educational-vocational goals, and participation and leadership in extracurricular activities. Expected levels of student accomplishments are developed for each of the above categories, and hierarchies containing three levels above and three levels below the expected levels are defined. Methods for assessing and quantifying performances in each of the separate categories and combining them into a global assessment of accomplishments are described. Finally, the results of a trial of the procedure with 497 students is presented.

Madsen, Irv. "A study of the relationship between high school activity participation and college academic performance of the graduates of 1961 who participated in the Research and Guidance Laboratory for Superior Students." Unpublished Master's thesis, 1965.

This study examines the relationship between school activity participation and college academic achievement. Classification of results obtained indicates no significant relationship between grade-point average (GPA) and total participation in high school (H.S.) extracurricular activities; a positive relationship between GPA and H.S. service activity; and a negative relationship between GPA and physical H.S. activity. This study indicates no justification for great expansion or curtailment of high school extracurricular programs.

Olen, Marcia M. "A descriptive follow-up study of selected superior students in college." Unpublished Master's thesis, 1965.

A follow up of 98 superior students who graduated in 1961 and were either currently enrolled in college in 1965 or had graduated from college. The students were described in areas of personal information, college achievement, and program of study, honors and awards, membership and leadership activities, work experiences, summer activities, college financing, vocational choice, future plans and goals, and sources of inspiration. Results indicated that young people identified by teachers using Laboratory criteria when they were in grade nine were still superior performers nine years later. Many students were critical of their high school experiences because of inadequate development of critical thinking, study skills, and self-directed learning beyond minimum expectations. They were critical of colleges because of lack of adequate counseling and guidance services.

Peterson, Terrance L. "Part-time work during high school and the career development of superior students." Unpublished Master's thesis, 1968.

This study was to determine if part-time jobs during high school were useful to superior students in formulating career decisions. No important relationships were found between past work experience and stability of college major or career choice.

Ragus, Terry. "Consistency of superior students' career choices in science and non-science areas." Unpublished Master's thesis, 1968.

This examination of career choices of superior students showed that science-oriented students tended to show high school career choices that were consistent with final choices; whereas humanities-oriented students did not. The members of the sample for the study were 58 males who graduated from high school in 1963 and 1964 and who ranked in the top of the Laboratory population on test scores, scholastic performance, and counselor predictions of future academic success.

Richter, Roger D. "The effect of the interview on clinical predictions of academic performance in college for superior students." Unpublished Ph.D. Dissertation, 1966.

This investigation was to determine if accuracy of counselor clinical predictions of college academic performance was contingent on direct interviews with students. Results showed that use of well-kept cumulative records led to accuracy which was not improved on by direct interviews.

Rothney, J. W. M. "Studies in the discovery and guidance of superior students." Cooperative Research Project SAE 8961, U.S. Office of Education, 1963, 101 pp.

The report contains a variety of findings from several research efforts described elsewhere in this booklet. Follow-up data on high school graduates of 1961, 1962, and 1963 are included.

Ruck, Jane E. "A comparison of career choice and development among academically able high school students." Unpublished Master's thesis, 1966.

A comparison of career choice and scholastic progress of 95 Laboratory participants against a group of regional National Merit Scholarship winners was completed five years after the students' graduation from high school. With respect to career choice, percentages of Laboratory participants in given career fields resembled national figures for Merit Scholars more than figures for the Wisconsin region. More Laboratory participants were undecided during high school about careers, this fact being attributed to more intensive counseling and guidance activities which may broaden their awareness of career possibilities. The two groups were very similar in other respects, showing about the same proportions finishing college on schedule, entering graduate study and entering various areas of specialization. Both groups exceeded national averages in terms of percentages entering science careers. Laboratory students shifted major fields more often, but less severely than Merit Scholars.

Sanborn, Marshall P. "Vocational choice, college choice, and scholastic success of superior students." *Vocational Guidance Quarterly*, Spring, 1965.

The study was an exploration of relationships among students' vocational goals, their educational goals, their reasons for selecting particular colleges to attend, and their success or lack of success in the first semester of college. Results led to the conjecture that career goals and scholastic success are interdependent during high school as well as during college, and that expressed goals which are later changed may have the same effect as stable goals insofar as satisfaction and success in the first year of college is concerned.

Simono, Ronald B. "Prediction of science and non-science undergraduate majors among a group of male high school students." Unpublished Ph.D. Dissertation, 1965.

A discriminant analysis was made of performance, environment, and activities patterns of 109 superior students who went into science and non-science college majors. Information obtained from the analysis was then used to attempt to predict college major areas of study for a cross-validation sample of 106 superior students. Only the individual's involvement in particular school and out-of-school activities was found useful for discriminating between science and non-science majors. When differences were found between subcategories under science and non-science, again the activities index was the crucial variable. It was suggested that implications for choice of vocational field among superior students may reside in reports of their extracurricular activities more than in information about their scholastic and intellectual performances.

Winsor, Norma. "A report three years after high school of the graduates of 1960 who participated in the Research and Guidance Laboratory for Superior Students." Unpublished Master's thesis, 1964.

26 girls and 28 boys who graduated from high school in 1960 were surveyed three years later to determine current educational and occupational status, civic activities and leadership, and future goals. At the time of the study, 41 respondents were enrolled in college and 13 were not. Results showed a tendency of superior students to attend larger rather than smaller colleges and to attend within Wisconsin rather than out of state. Participation in civic, social, and religious organizations was preponderant among college attenders and not among those who did not attend college. About 35 percent of the college group were planning on graduate school, and about 75 percent of all respondents planned to be full-time students the following year.

We have formed several generalized opinions on the basis of the foregoing studies and the overview of post-high school experiences of Laboratory participants:

1. Both in terms of their own reports in follow-up questionnaires and interviews, and in terms of their persistence in colleges they attend, the students show satisfaction with their choices of post-high school education. There is very little transferring among this group. They tend to remain until graduation in the institutions they originally selected. They give positive opinions of both academic and social life in college; and sometime during their undergraduate years they usually begin talking about plans for graduate study.

We do not know to what extent satisfaction is contingent on success. There are so few who are academically unsuccessful that no pattern of relationships between degree of satisfaction and degree of success can be established. It appears that those who have academic difficulty rarely attribute it to the institution they attend. Instead they talk about their own poor study skills, uncertainty about their reasons for attending college, or other personal situations. They also report satisfaction with their college choice.

Since about half of the students attend The University of Wisconsin, at least that proportion can report a rather thorough prior investigation of the college they are attending. Two aspects of this guidance experience—actual visits to university classes and personal interviews with professors in academic fields of interest to them—are consistently rated as very valuable to their decision about post-high school education. This is true among those who attend The University of Wisconsin, and also among those who do not. Those students who attend other institutions usually report that they investigated it and others adequately before selecting a college.

2. Scores on tests of achievement and scholastic aptitude are not particularly useful for differentiating between Laboratory participants who will do well in college and those who will do poorly. This appears to be true of tests standardized on normal populations and also of those constructed especially for use with superior students. The highest correlation obtained between college grades and any single test performance

was .39, using the Terman Concept Mastery Test. This correlation was also higher than that obtained with any other predictor measure—including high school grades.

This finding is not surprising, since the total group of participants was selected so as to represent (among other things) high-scoring individuals. Any of them who do poorly in college academic work are persons who run contrary to statistical norms based on ordinary standardized tests. Special tests, such as the Terman Concept Mastery Test, may provide us with a wider range of test scores, but the students' performances are still very high relative to normal populations of students. Many who rank relatively low in distributions of scores on special tests still rank high on grades.

Coupled with the above facts is the fact that Laboratory participants appear to sort themselves somewhat insofar as college choice is concerned. As was mentioned earlier in this section, average test scores of the students vary among several types of colleges they attend, the highest scores being associated with the more competitive college environments. This selective factor probably tends to have a leveling effect on grade-point averages, which do not differ much from college to college. Within any college, of course, there is variability of test scores among the Laboratory students who attend. Test score–GPA correlations are not significantly higher within colleges than they are across colleges. Thus it would seem to be a very uncertain business to try to make predictions, or to give advice about college selection, on the basis of test scores.

3. Material concerning self-concepts, social awareness and concern, and clarity and purposefulness of goals seem to have meaning in the consideration of post-high school academic choice. These factors appear to be related to college success and satisfaction. In counseling with superior students, it should be fruitful to help them focus on goals, ambitions, values, and attitudes more heavily than on capabilities for college work.

4. Career choice or choice of major field in college may be very difficult for students with multiple interests and broad potentialities. Most students who take part in the Laboratory are of this type. Because they have the capability to accomplish well in a variety of areas, they cannot easily choose directions on the basis of areas they perform best in. With but few exceptions they also show broad interests. They are aware and curious in many areas and cannot readily identify one area of primary interest.

We have found very little of promise for predicting specific career choices. Broad fields, such as "science" or "non-science" appear to be related to choices of activities made by the students during high school, but this relationship is loose. There is a loose relationship between career choices and subject area preferences also. During their senior year in high school, we ask the students a series of questions: "Do you think you would choose an occupation in which high performance in (specific school subject) was required?" Later, the students rarely choose an occupation which does not require good performance in one or more of the subject areas they registered positive answers to in this

series of questions. Yet, many different occupations may require high performance in subjects such as English or mathematics. This kind of information, like the activities choices, seems useful for focusing on broad fields, but not on specific careers.

Another factor in career choice seems obvious. It is that careers in the social sciences and human affairs are chosen later than careers in natural sciences and technological fields. Also, most of the changes of college major fields are from scientific or technological to social science and humanities fields. We conjecture that careers in these latter fields are often not "appreciated" by students until they have reached a greater level of maturity than they have at the end of high school. It is perhaps easier at the high school level to make direct associations between school subjects and science or technological careers than to make such associations with social careers.

In counseling with multipotential students, it would appear useful at the high school level, to help most of them think in broad terms about careers, keeping open minds as to specific career choices. There are exceptions to this generalization, of course. Some youngsters focus on highly specific interests during adolescence and pursue them without deviation thereafter. Sometimes these persons trouble us because of their apparent lack of broad interests, but they present us with very few career choice problems.

One interesting fact concerning career choice of Laboratory participants is worth mentioning here. The most common career field thus far chosen by these students is teaching. About one-fourth of all those who have graduated from high school have gone into teaching majors and/or careers. This kind of information should help dispel the rumor that only the mediocre go into teaching and that the superior go into other fields.

5. Our experiences with the follow-up studies have reminded us repeatedly of the difficulties in adequate assessment of post-high school accomplishments of multipotential students. Data on academic performance and major field are relatively easy to get, but assessment of accomplishments other than academic is less certain. We are impressed by the great variety and exciting quality of nonacademic accomplishments and experiences Laboratory participants report during their college years, but because of their uniqueness it is difficult to classify and report these experiences in group description. Also it is difficult to assign "quality points" to such experiences, even though quality is obvious, since there are no common standards to go by.

"Objective" types of data are easily obtained and tabulated, but "subjective" information presents a more difficult problem. Again, uniqueness prevents classification, and classification obscures uniqueness. We are convinced that much, if not most, information of real importance about individual development is unique and highly subjective. Consider the following comments, drawn from material in only a few follow-up folders of Laboratory participants:

"The counseling I received was probably adequate as far as the University's definition of education is concerned; however, severe medical problems (and the resulting academic difficulties), as well as a general disillusionment with the original plans I had were not helped in any way

by counseling. Looking back at the last four years of college, I can think of only three or four courses I took which I feel have paid an adequate return for my investment of time, money and attention. My current interests are well-defined although rather diverse and include areas of history, literature, sociology and mathematics; perhaps I would have fared better academically had I majored in liberal studies originally, but I doubt it. Even though I enjoy electronics and related areas very much and have been doing outside research work at a graduate level (partly on my own and partly for employment) and even though the subjects present very little difficulty in understanding, the university programs, especially in electrical engineering, severely limit my interests and abilities, which are already limited by medical difficulties. I haven't definitely decided whether I will finish and receive a degree yet but I am interested in writing and have several technical articles as well as some fiction currently in progress. I feel the most valuable experiences I have had in college were not in the classroom but in the opportunity to meet people with widely varying viewpoints and opinions as well as the opportunity to form my own viewpoints and grow intellectually."

• • •

"Looking back, I chose Yale more for its name than for anything else. I gave the school very little systematic investigation and status was at the root of my motivation to attend. It seems quite odd (and is somewhat upsetting) that the non-coed factor did not really enter my consideration. But even if I had tried to anticipate the type of social life Yale involves, I would never have been able to envision what it is really like. Within the college, as I said above, I am socially satisfied but of course, "within" at Yale is inadequate. There must be weekends, and these tend to be overly high-pressured, hectic, time-consuming and expensive. I have grown accustomed to this but would prefer the relaxed atmosphere of a coed school.

"Last fall I was dubious about ending up in the top half of the class. Everyone else had to be more intelligent and knowledgeable than I. As a result I studied extremely hard the first semester. Perhaps it was the frightened grind that made me unhappy. But one consolation was a heightened self-confidence and now I feel that very few Yalies "have it over me" academically. The second semester was considerably more easy-going, and I expect the ensuing year to be more so."

• • •

"I just wanted to say a few things that were not covered on the form. I feel that there should be a good deal more encouragement for girls who are interested in the sciences. If a person has ability in a field, it should not make any difference at all what sex the person is. I realize this is still more or less a dream at the present time, but it shouldn't be. I don't know what records you have on me, but they will show that I have a definite ability in languages. They come easy to me, but I say this without bragging. I just want to make a second point. Once a person decides on a field—and I chose chemistry my freshman year—they should not be constantly badgered to leave that field and go into one which would be much easier, one for which they have a "knack." I spent four years coming to this decision. For this reason, and with the encouragement of my husband, I attended Wright State University and finished my undergraduate sequence of chemistry courses, the courses I should have taken at Michigan State. I just needed the encouragement.

"About my current plans, etc. As I said, I attended Wright State in Dayton, Ohio, to pick up the necessary undergraduate courses. We had applied to go to Kirkland AFB in Albuquerque, New Mexico, and I had been accepted at the University of New Mexico as a chemistry graduate student. Then, unexpectedly, we were sent to Edwards instead. I quickly applied to U.C.L.A. and, frankly, expected to hear that I had been accepted. Instead, I got a notice saying that no transcript from Wright State

had been received. I hurriedly ordered a second set, assuming that they had gotten lost in the mail. Eventually I had ordered seven transcripts from Wright State. Just before we left Ohio I ordered my last set. The girl promised faithfully to send them out that afternoon. Instead, as I found out later, the transcripts were sent a MONTH later. Naturally the deadline for applications had already passed by then. Now California, having too many college students, has closed the applications for spring term—no one will be accepted and I do not know quite what to do. Somehow, I will get my M.S. here. Then I intend to work on a Ph.D. until I am within nine months of it, at which time I will go to Michigan State for the necessary three terms. After that I think I would like to teach at a college while my future children are of preschool age. Then—I don't know. Research or more college teaching, I think."

* * *

"Writing to you makes me feel like the guinea pig with the sore foot, demanding special treatment; can't help regarding this letter as a sort of prolonged squeek. Which is quite unfair to your program, and I'm sorry.

"I've been in Germany for nearly a year, discovering what a surprisingly difficult person I am to live with. Never really noticed it at home or in the dormitory. School here is just what one makes of it—no exam until one feels ready; most students take 7 years. I've read and scribbled an amazing amount, considering that the chief motivation has been me; but I'm still afraid of the word poet. Never dared saying even that much before. Jolly good.

"The problem is returning To come back to Wisconsin seems so insufficient. Or something. It's as if returning is giving in; allowing myself to be swallowed by the secure, defined life. And staying here is challenging something I'm perhaps not ready for. One minute I want to be back, the next I can't bear to leave.

"The solution is perhaps to go somewhere else for a while. In off moments I consider swimming to Australia.

"I'm not asking you to recommend the one or the other, but is it possible for you to help clarify motives so I can decide for myself? There's no certain boy holding me here—would it were so simple. Have I said enough?"

* * *

About half the follow-up folders in the Laboratory files contain information of the above type—difficult to anticipate when developing follow-up procedures, too unique to classify in categories for group data reporting, impossible to evaluate on some scale of goodness, often incomparable, and always essential to the understanding of individual development. Those who would secure adequate follow-up data on high school graduates must take care to establish relationships and devise procedures which allow and encourage this kind of information. In the long run, the proof of the value of guidance probably will depend on it.

APPENDIX A

THE UNIVERSITY OF WISCONSIN
Research and Guidance Laboratory

SECOND-YEAR INFORMATION

Name_____ Date_____

School and Location_____ Interviewer_____
(last name)

Home Address_____ Grade_____ Birthdate_____

Telephone Number_____

1. Is there any change in your family situation since we last saw you?
2. What courses are you taking this year? (List them and give best estimate of marks.)

   _____ _____

   _____ _____

   _____ _____
3. How many study halls per week do you have?_____
4. If you could spend all your time on one of your *current* subjects, which one would it be?
5. Why?
6. Second choice?
7. Why?
8. If one subject were to be dropped from your *current* high school program, which would it be?
9. Why?
10. Second choice?
11. Why?
12. Do you have enough time to complete your assignments in school?
13. How much time, on the average, do you spend in doing school work each night?
14. In what group activities—school, church, or community—do you participate?
15. Any offices?
16. What do you do when there is nothing that you *have* to do?
17. Any activities in which you would like to participate but can't?
18. Why choose them?
19. Why can't you participate?
20. What courses are you planning to take your third year?

    _____ _____

    _____ _____

    _____ _____

21. What courses during your fourth year?

    _____ _____

    _____ _____

    _____ _____

22. Is there any subject in particular you are looking forward to taking in your next years in school?
23. Why?
24. Given the opportunity to finish high school in two years instead of three by doing extra work, would you take it?_____
25. Why?
26. Why not?
27. Would you like to be in classes composed only of better-than-average students?_____
28. Why?
29. Why not?
30. What real advantages are there in being a better-than-average student?
31. What disadvantages?
32. Who are your closest friends this year (circle 3 closest friends)?
33. If I were to ask them what kind of a person you are, what do you think they would say?
34. What qualities would they like most about you?
35. Is there anything about your health that keeps you from doing things you want to do?
36. If you have a part-time job, what do you actually do on the job?
37. What occupation are you considering most as a career?
38. Why are you considering it?
39. What other occupations have you considered during this past year?
40. What has your father said about your plans for your future?
41. What has your mother said about your plans for your future?
42. If things worked out just the way you wanted, what would you like to be doing ten years from now?
43. If you had any three wishes, what would they be?
44. To whom *in your school* have you gone when you wanted to talk over your plans and your problems?

    Name_____ Position_____

45. Any comments or questions?

APPENDIX B

ORAL PROBLEMS EXERCISES

Problems

1. Tom's house was burglarized last Saturday. Tom was at home all of the morning but out during the afternoon until 5 o'clock. His father left the house at 3 o'clock and his brother was there until 4. At what time did the burglary take place?
2. One day last week a man went to town with only five dollars in his pocket, but returned with fifteen. He bought a pair of shoes and some meat in the market. He also had his eyes examined. It so happens that the man gets paid every Thursday by check, and the banks in this town are open to cash checks on Tuesday, Friday and Saturday only. The eye doctor is not in his office on Saturday and there is no market on Thursday or Friday. What day did the man go to town?
3. What relation to an individual is his sister's grandfather's only child's wife?
4. Two fathers and two sons went hunting. Each shot a duck and none shot the same duck. However, only three ducks were shot. How could this happen?
5. Four white cows and three red cows gave as much milk in five days as three white cows and four red cows gave in four days. Do white or red cows give the most milk?
6. In the Robinson family, each daughter has the same number of brothers as she has sisters, and each son has two more sisters than he has brothers. What is the least number of children in the family?
7. A truck starts out for the city dump, 10 miles away, going at a speed of 5 miles an hour. At the same time, a horsefly that can fly 20 miles an hour leaves the truck and flies to the dump, immediately turns around and returns to the truck, and keeps shuttling back and forth this way until the truck arrives at the dump. How far does the fly travel altogether?
8. A wedding produced the following results. The father of a young woman became her husband's brother-in-law, and her husband's sister became her stepmother. How could this happen?
9. There are six white socks and six black socks in a drawer. If one reaches into the drawer in the dark, so that he is unable to see them, how many socks must be removed to make sure he has a pair of matching socks?
10. A prince is being pursued by robbers. Upon reaching the castle, he finds the drawbridge up and no one attending it. The castle is surrounded by a square moat three feet from the castle and eight feet in width. It is filled with dangerous reptiles. The prince finds two boards each of which is seven feet eight inches long. How can he cross the moat?
11. A railroad line runs from Pine to Oak. Elm is on this line just half the way between Pine and Oak. Maple is just as far from Pine as it is from Elm and Elm is as far from Maple as it is from Oak. If it is twenty miles from Pine to Maple, how far is Maple from Oak?
12. When driving some cows, a boy was asked how many cows he had. He replied, "When they are in line there are two cows ahead of a cow, two cows behind a cow, and one cow in the middle." What is the least number he could have?

ORAL PROBLEMS RATING

Hints for Observation

1. Gives answer immediately after reading–self-explanatory.
2. Reviews problem breaking it into parts–self-explanatory.
3. States key words and figures–states one or more of them (not necessarily all).
4. Uses approximation as a guide–uses an approximate answer as a guideline to work the problem. (Ex. Robinson family–let's use 3 and see if there are more children than that.)
5. Uses if-then approach–This includes elimination, stating if-then, and if these two words are merely omitted from the response. (Ex. castle–(if) the boards are less than eight feet, (then) he will have to use both of them.)
6. Uses mathematical approach–usually an algebraic attack, but definitely an attempt to use mathematical figures (x and/or y, etc.).
7. Seems to be guessing–the answer does not follow from his reasoning as you can follow it; an answer for the sake of an answer, either right or wrong.
8. Brings in outside distractors–uses information not given in the problem. (Ex. windows in the castle or the prince has a horse, etc.)
9. Rejects approaches after trial–attempts one way and then changes and tries a different attack. (Ex. horsefly–tries to use half the distance approach and then changes to the ratio of comparative speeds.)
10. Gives answer and attempts to justify it–this may be a method of reasoning for arriving at the answer or it may be a defense the student uses to justify a wrong or right answer he has given.
11. Persists in an inappropriate method–any time the student uses a wrong method and doesn't change when he fails to get the answer within the time limit.
12. Misunderstands the problem–doesn't know exactly what the answer to the problem requires; the answer may be right or wrong.
13. Uses hands in solving problem–self-explanatory.
14. Double checks his answer–this is the student who wants to check and make sure of his answer before he gives it finally.
15. Gives up before time is called–self-explanatory.
16. Seems to enjoy the challenge–observed expressions or statements to this effect.
17. Hesitant, timid–usually must be observed (nervousness).

APPENDIX C

EXAMPLE OF A TEACHER-MADE CONTRACT

Contract for Released Time Independent Study

Student David Nichols Date December 2, 1969

Teacher Mrs. Paulson Year in School Junior

Subject Involved Algebra II

Previous courses that generally relate
Arithmetic in Grade School
Algebra I
Geometry

Objectives of independent study
1. David's first objective must be that he provides for himself a strong, basic foundation for future mathematics courses.
2. He must develop initiative and independent thinking.
3. He must feel an obligation to live up to his own potential rather than be guided by the abilities and inclinations of others.
4. Especially is it desired that David will continue to develop a genuine interest in and love of learning.

Plan of action to attain objectives
David will be released from regular classes and homework to study independently. He will expect to keep up with the material covered in class, and use reference books to supplement this material. However, he will be free to pursue interests purely his own in the field of mathematics. Vannatta, Meserve, and Allendoerfer are suggested for supplementary texts.

Evaluation
He will take regular class tests, but will not be placed on the class curve. His independent work will be evaluated by the teacher in informal discussions. Independent study will continue as long as both the teacher and student feel it is beneficial.

Signature of Teacher

Signature of Student

Signature of Parent

APPENDIX D

CHECK YOUR SCHOOL AGAINST THIS LIST OF PROVISIONS FOR SUPERIOR STUDENTS IN SOME WISCONSIN HIGH SCHOOLS

Check those that are done in your School

1. Advanced sections in courses are provided and advanced courses are offered. _____
2. Some students do advanced work in college texts. _____
3. Students are permitted to take more than the usual course load. _____
4. Independent study programs are arranged. Teachers arrange consultation periods for students working on special projects. _____
5. College-type seminars designed to introduce topics not ordinarily covered in course work, or to explore course topics in greater length are offered. _____
6. Participation in advanced placement program is encouraged. _____
7. High school or college-level correspondence courses are taken for enrichment. _____
8. College courses are taken at a college while students are still in high school. _____
9. Auditing of classes is substituted for study halls. _____
10. Enrollment in two classes meeting at same hour is permitted for enrichment or when there are schedule difficulties. _____
11. Book clubs are organized. _____
12. Honor study halls (unsupervised) are provided. _____
13. Students act as tutors in fields of special competency. _____
14. Classes for enrichment are offered locally during the summer. _____
15. Encouragement to attend summer institutes is given. _____
16. Students are encouraged to participate in many contests, science talent searches and scholarship competitions. _____
17. Specialists in the community supplement regular programs, work with students on special projects, or evaluate students' work. _____
18. Try-out vocational experiences are arranged. _____
19. Early admission to college is arranged for a few selected students. _____
20. An honors banquet for high-achieving students and their parents is held annually. _____
21. Graduates in college return to the school to tell students about experiences in college. _____
22. Schools publish products of students in special annual. _____
23. Follow-up records of graduates are kept. _____
24. Conferences with *both* parents are held at least once a year. _____

APPENDIX E

SAMPLE PARENT CONFERENCE FORM

Student #_____

Name of student_____ School_____ Grade_____

Date of student interview_____ Date of parent interview_____

Student counselor_____ Parent interviewer_____

Attended parent conference: Mother only ( ) Father only ( ) Both ( ) Other ( )

If other than parents, explain:_____

The following topics are *often* covered in parent interviews. Any one may or may not be considered at any session, and others may be added:

1. Work and study habits
2. Choice of subjects
3. School activities
4. Community and church activities
5. Use of leisure time
6. Occupational choice
7. Choice of post-high school education
8. Financing college
9. Reading practices
10. Test interpretation
11. Nature of the Laboratory program
12. Part-time employment

Counselor's recommendation for discussion with parents.	*Parents' remarks and reactions.*
1.	1. Was topic discussed? ( ) Yes ( ) No
2.	2. Was topic discussed? ( ) Yes ( ) No
3.	3. Was topic discussed? ( ) Yes ( ) No
4.	4. Was topic discussed? ( ) Yes ( ) No
5.	5. Was topic discussed? ( ) Yes ( ) No
6.	6. Was topic discussed? ( ) Yes ( ) No

Additional interviewer comments: (Note particularly if promised to take any action on any area so that a check can be made the following year.)

APPENDIX F

TEST SCORES AND PERCENTILE RANKS

9th-Grade
Quantitative

Percentile values for the *Wisconsin Inventory for Talented Students–Quantitative (IIR)* based on the raw scores made by 705 ninth-grade students during the 1964-1970 school years. 50-item test.

Raw Scores	*Percentile Values*
34 & above	99
33	98
32	98
31	98
30	96
29	95
28	93
27	92
26	88
25	84
24	81
23	77
22	73
21	68
20	62
19	55
18	46
17	38
16	31
15	25
14	19
13	14
12	10
11	6
10	4
9	2
8	1
	Total Number 705
	Mean Score 18
	Median Score 18

9th-Grade
Verbal

Percentile values for the *Wisconsin Inventory for Talented Students–Verbal*, based on the raw scores made by 1023 ninth-grade students during the school years, 1962-1970. 100-item test.

Raw Scores	*Percentile Values*	*Raw Scores*	*Percentile Values*
82 & above	99	42 - 43	54
80 - 81	98	40 - 41	46
78 - 79	98	38 - 39	41
76 - 77	98	36 - 37	36
74 - 75	97	34 - 35	30
72 - 73	96	32 - 33	24
70 - 71	95	30 - 31	19
68 - 69	93	28 - 29	15
66 - 67	92	26 - 27	12
64 - 65	89	24 - 25	8
62 - 63	87	22 - 23	6
60 - 61	86	20 - 21	4
58 - 59	82	18 - 19	2
56 - 57	80	16 - 17	2
54 - 55	77	14 - 15	1
52 - 53	73	12 - 13	1
50 - 51	70		
48 - 49	66		Total Number 1023
46 - 47	63		Mean Score 42
44 - 45	58		Median Score 40

11th-Grade
Verbal (Repeat)

Percentile values for the *Wisconsin Inventory for Talented Students—Verbal* based on the raw scores made by 742 eleventh-grade students during the 1964-1970 school years. 100-item test.

Raw Scores	*Percentile Values*	*Raw Scores*	*Percentile Values*
96 & above	99	58 - 59	47
94 - 95	99	56 - 57	41
92 - 93	97	54 - 55	37
90 - 91	95	52 - 53	32
88 - 89	95	50 - 51	27
86 - 87	94	48 - 49	24
84 - 85	92	46 - 47	20
82 - 83	90	44 - 45	17
80 - 81	88	42 - 43	13
78 - 79	85	40 - 41	10
76 - 77	82	38 - 39	8
74 - 75	79	36 - 37	7
72 - 73	74	34 - 35	5
70 - 71	70	32 - 33	4
68 - 69	67	30 - 31	3
66 - 67	63	28 - 29	2
64 - 65	60	26 - 27	1
62 - 63	55	24 - 25	1
60 - 61	51		

Total Number 742
Mean Score 60
Median Score 59

11th-Grade
Quantitative (Repeat)

Percentile values for the *Wisconsin Inventory for Talented Students—Quantitative (IIR)* based on the raw scores made by 346 eleventh-grade students during the 1967-1970 school years. 50-item test.

Raw Scores	*Percentile Values*
43 & above	99
42	98
41	98
40	97
39	96
38	94
37	93
36	91
35	87
34	86
33	83
32	81
31	75
30	72
29	68
28	62
27	56
26	50
25	44
24	39
23	32
22	25
21	20
20	14
19	10
18	8
17	7
16	5
15	3
14	2
13	1

Total Number 346
Mean Score 26
Median Score 26

Percentile values for the *Terman Concept Mastery Test*, based on the raw scores made by 1410 twelfth-grade students from 1960-1970.

Raw Scores	*Percentile Values*
140 & above	99
135 - 139	98
130 - 134	97
125 - 129	96
120 - 124	95
115 - 119	94
110 - 114	92
105 - 109	89
100 - 104	86
95 - 99	83
90 - 94	78
85 - 89	72
80 - 84	66
75 - 79	58
70 - 74	49
65 - 69	39
60 - 64	30
55 - 59	22
50 - 54	16
45 - 49	10
40 - 44	6
35 - 39	4
30 - 34	2
25 - 29	1

Total Number	1410
Mean Score	73
Median Score	71

APPENDIX G

School systems which have participated at various times in the Research and Guidance Laboratory for Superior Students.

Abbottsford
Albany
Almond
Amherst
Antigo
Ashland
Athens
Baraboo
Beaver Dam
Belmont
Birnamwood
Black River Falls
Bonduel
Bowler
Brodhead
Burlington
Butternut
Cedarburg
Clintonville
Colby
Cumberland
Delavan-Darien
De Pere
Edgar
Edgerton
Fall River
Fort Atkinson
Fredonia
Gays Mills (North Crawford)
Glenwood City
Green Lake
Greenwood
Gresham
Hammond
Hartland
Hayward
Hortonville
Iola-Scandinavia
Ladysmith
Lancaster
Madison
Madison-Edgewood
Manawa
Manitowoc
Marathon
Marinette
Marion
Marshfield
Medford
Merrill
Middleton
Milwaukee-Custer
Monona Grove
Mosinee
Nekoosa
New Berlin
New Holstein
New London
Oak Creek
Oconomowoc
Oconto Falls
Oostburg
Oshkosh
Pittsville
Plymouth
Port Washington
Random Lake
Rhinelander
St. Croix Falls
Sauk-Prairie
Schofield
Shawano
Sheboygan
Sheboygan Falls
Shiocton
Spencer
Spooner
Stevens Point
Stoughton
Stratford
Sturgeon Bay
Thorp
Three Lakes
Tony
Verona
Viroqua
Waterloo
Waukesha
Waupaca
Wausau
Wauwatosa
West Allis
Weyauwega
Whitefish Bay
Winneconne
Wisconsin Dells
Wisconsin High
Wisconsin Rapids
Wittenberg

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